Public Report No. 15

AQUACULTURE
and the Administration of Coastal Resources in British Columbia

December 1988

Ombudsman
Fairness for all in British Columbia

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and the Administration of Coastal Resources in British Columbia

December 1988

Legislative Assembly
Province of British Columbia

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OVERVIEW

December, 1988

The dramatic increase in aquaculture activity along the B.C. coast in the past few years has brought with it the promise of greater economic growth and stability for many coastal communities; it has also underlined the potential for conflict among the many legitimate and sometimes competing users of coastal resources. This has resulted in a number of complaints to the Ombudsman's office representing a variety of personal, public and commercial interests, and focusing on concerns such as resource use planning, the tenure granting process, environmental safety and conflict resolution. These concerns have caused the Ombudsman's office to prepare this systems study of the regulation of aquaculture in B.C. This report deals with principles of administrative fairness and not with the technical or political aspects of aquaculture, which are beyond the mandate of this office.

Three levels of government are interested in this development: local government is concerned with zoning and planning, the Federal government with navigable waters and fish spawning grounds, and the Provincial government variously with waste management, economic development, and land and resource allocation. Private interests include those of coastal property owners, aquaculture entreprenuers, sport fishermen and recreational boaters, the tourist industry, coastal forest company operations, and commercial fishing companies and their unions.

The administrative practices and consensual initiatives discussed in this report are intended to assist resource management while avoiding conflict and litigation. Aquaculture is but one use of coastal resources and the rapid growth of the industry has provided the context for a case study of more general resource management principles. Environmental quality is as important to entrepreneurs investing in a vulnerable stock as to conservationists concerned with a vulnerable wilderness: broad and meaningful participation in long-range planning at once satisfies community and individual interests in protecting property, government concern that decisions are based on complete information, and business dependence on a certain and stable investment climate. Integrated management of abundant but finite coastal resources can put different areas to the appropriate and optimum use of each distinct interest, and revitalized coastal economies will help to finance the preservation and enhancement of other interests.

This report concludes with three major recommendations which address the statutory authority for the administration of aquaculture, the integrated management of coastal resources and activities, and the consensual resolution of related public interest disputes.

Stephen Owen
Ombudsman

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THE ADMINISTRATION OF AQUACULTURE AS A COASTAL RESOURCE IN BRITISH COLUMBIA

Background

Aquaculture as an industry has experienced rapid growth on the coast of British Columbia since the mid-1980s. While the term aquaculture is all-encompassing, and may refer to the raising of plants or animals in fresh or salt water, in British Columbia it has become popularly associated primarily with the rearing of salmon in net-pen facilities anchored in salt water near the shore. It is the rapid, and in some instances, unexpected appearance of these facilities which has caused concerns for a number of individuals living in or involved with the coastal areas of the province. Concerns received by the Ombudsman's Office have had at their foundation the issue of public involvement in aquaculture administration and decision making. While many individuals who lodged complaints with this office had obvious vested interests, such as ownership of a family home in or near the same location as the "fish farm", their concerns also reflected broader interests in the welfare of the general coastal environment and its inhabitants, human or otherwise. For the most part, complainants' frustrations appear to have stemmed from the lack - or at least a perceived lack - of a meaningful voice in the regulatory process. While there is no shortage of policies and policy requirements, both provincial and federal, the feeling remained that these policies were not known or readily available to the general public, nor were they effectively binding in a consistent manner on the Ministry, or Ministries at all times during which discretion was being exercised.

The physical or geographic characteristics of the British Columbia coast which make it suitable for salmon farming, or long-line oyster culture, also make it attractive and desirable to other potential users of the coast, including recreational, residential, commercial, and industrial users. The conflicts which have arisen with the rapid appearance of net-pen facilities have not disappeared or dissipated over time. Coastal communities, in their efforts either to attract or control the development of the aquaculture industry, find themselves embroiled in passionate disputes concerning appropriate use of coastal resources. For many communities, the fact that they possessed power to control development through zoning measures and the creation of official community plans was cold comfort, as in some instances the industry had arrived before the planning and public participation process could be completed, or commenced. This is, of course, a problem common to all matters of zoning within the context of disputes about development.

This systems study makes recommendations for enhancing the mechanisms for public participation in aquaculture administration and decision making. It also addresses issues relating to the furtherance of the overall goal of administrative fairness through the application of principles of integrated coastal resource planning and management. A major aspect of this paper deals with a proposal for the resolution of conflicts through the establishment of contemporary consensual dispute resolution strategies and techniques. Finally, this study addresses related issues of environmental impact and health considerations, insofar as issues of administrative fairness arise within the context of these highly technical matters.

The administration of aquaculture presents challenges which are inherently inter-disciplinary in nature. This office does not address matters which are, in substance, technical. The recommendations contained within this paper have as their collective goal the enhancement of the fairness of the administration of coastal land tenures and aquaculture practice, to the benefit of those who will use, share, or allocate coastal lands and waters.

It is important to state at this point that this office recognizes the inherently evolutionary nature of regulatory programs. Flexibility and discretion are valuable in the developmental stages; as experience is accumulated, however, it is appropriate to provide a greater degree of structure to the program requirements, and to the discretion which is exercised.

This structuring is best accomplished through legislation, with accompanying regulation passed pursuant to the authority of the statute. Aquaculture development, in the opinion of this office, is reaching the stage where a legislative framework for regulation is both necessary and appropriate.

The Practice of Aquaculture

Oceanographer Jacques Cousteau has observed that for man, the future lies in doing in an ocean environment that which he has already done for thousands of years on land - namely, the controlled rearing of animals within a contained area for the purpose of food production.[1] In countries such as Norway, Sweden, Scotland, Chile, and Japan, aquaculture is firmly established as a valuable industry for the production of seafood for both domestic use and export. A combination of offshore interest in the aquaculture potential of the B.C. coast from countries such as Norway, combined with expanding market opportunities for salmon products has resulted since 1984 in a dramatic growth in the demand for aquaculture land tenures. (See Appendix 10 for charts illustrating tenure distribution and industry composition). These tenures, which take the legal form of either a long-term lease or licence, are issued by the Ministry of Crown Lands (formerly Ministry of Forests and Lands) operating under the authority of the Land Act.[2]

Because salmon farms are floating, often self-contained, light industrial - or, more accurately, agricultural - structures which are fixed usually within 100 metres of the low tide water mark, they represent a somewhat novel introduction to the shore line environment: Appendix 1 shows a typical net-pen facility with walkways supported by floats. The floats may be hollow fibreglass, foam, or lightweight concrete. Two nets can be seen: an outer net to deter predators such as dogfish and sea lions, and an inner net which contains the fish stock. Feed in the form of pellets is distributed in the net-pen at intervals determined by the operator. Feed which is not consumed as it drifts downward will usually pass through the net and, along with fish feces, be deposited on the seabed in a manner determined by the depth, current flow, and tidal action at the net-pen site. Impact of the solid waste will vary from severe in a poorly flushed, inappropriate site to negligible at a site with excellent current, depth, and flushing.

Because of the tendency of the inner nets, with their relatively fine mesh, to become blocked or fouled with marine organisms such as mussels, kelp, or various types of seaweed, some operators have their nets dipped before installation in an anti-foulant compound. TBT, or Tributyltin, a highly toxic tin-based substance, was at one time used by a number of farms, but was banned for use on nets by the Salmon Farmers' Association, and by the Federal Government. A copper-based anti-foulant (cuprous oxide) is now employed by a number of farms, with cost-benefit analyses being conducted by some facilities to determine its overall usefulness. Anti-foulant usage has been the focus of concern expressed to this office by certain individuals who fear a cumulative biological impact.

It will be noted that net-pen facilities bear some resemblance to a marina in that the submerged nets which contain the fish are suspended and linked by a series of walkways, usually assembled in a geometric pattern. However, they exist for what is primarily an industrial purpose, to benefit the owner of the fish farm. Apart from providing boat moorage as a public courtesy, as some fish farms do, they do not directly serve the general public. In this respect, they are similar to coastal log dumps which exist to serve the needs of the forest industry. Again, however, unlike log dumps or booming grounds, fish farms have not been a part of the province's history to the extent that their environmental impacts are well known, their general economic contributions are recognized, and their visual impact is assimilated into the consciousness of other coastal users.

Many individuals have economic interests in the aquaculture industry, directly or indirectly. Or they may simply wish to see an improvement in the employment picture for coastal communities. There appear to be few individuals within rural coastal communities who are neutral on the subject of fish farming. Opponents of the fish farm concept are greatly concerned at the ease with which a net-pen facility, which has the portability of a log boom, can be floated into a bay and anchored, transforming an area overnight. They fear the environmental impact of the farm, with tens or hundreds of thousands of fish in an confined environment doing what all organisms do - ingesting nutrients (in this case processed by man) and excreting waste products into a relatively limited area. (For an illustration detailing the various aspects of this interaction, see Appendix 12: "Possible impacts of a salmon farm upon the marine environment"). Pleasure boaters see favourite anchorages being occupied by large net-pen facilities. Scuba divers and tourists see the face of uninhabited areas being changed through a permanent industrial presence. Traditional fishermen see fish farms as a biological threat to wild stock. The industry as a whole claims that it is a perfect, environmentally sound way to exploit the riches of B.C.'s coastal waters, and it is with each passing month developing new fish-rearing technology aimed at enhancing operational productivity and reducing adverse environmental effects which may be caused by the farm (excess waste), or suffered by the farm (e.g. plankton blooms). Opponents will often concede the potential value of the industry, but "not in my backyard".

As the industry attempts to advance its interests in establishing itself as a viable and important element of the British Columbia economy, it must at the same time fight a continual battle with those who believe with similar sincerity that the widespread growth of the industry will produce long term costs for the province far in excess of any benefits conferred. And both opponent and proponent are forced to deal with the fact that (as with some other resource uses) no one governmental agency has exclusive jurisdiction over the enterprise. (See Appendix 2, Aquaculture Licencing and Approval Flowchart) The Ministry of Crown Lands allocates parcels of aquatic land beneath the high tide line; the Ministry of Agriculture and Fisheries reviews and approves development plans and provides technical assistance to fish farmers; the Ministry of Environment may consider waste management and alleged pollution issues; the Ministry of Municipal Affairs may be involved in related by-law matters; and the Ministry of Health may have concerns specific to site operation and waste disposal. Both the fish farmer and the coastal resident or resource user find that, although there are many policies and procedural requirements for fish farmers to observe, there is little in the way of regulations, and virtually no statute law created to deal directly with the aquaculture industry. With no expert, independent, and binding appeal tribunal to adjudicate competing claims, opponent and proponent may utilize every political, legal, or economic weapon at their disposal to advance their respective interests, the result often being that no one's interests are well served.

As was stated in Public Report #11 produced by the Ombudsman's office entitled, Pesticide Regulation in B.C., "It is necessary for government to develop procedures which identify and attempt to balance these competing interests in environmental management". This study examines the present administration of aquaculture, focusing upon the reality of its existence as an application of coastal resources in the province. Recommendations are made for enhanced administrative fairness in all aspects of coastal land allocation, the process which usually provides the basis for the conflicts which presently exist. Central to fair and effective (i.e. maximum benefit and minimum detriment to all parties) resource utilization is the concept of integrated planning and management; the report describes models which have been proposed or applied, and makes recommendations for the institution of appropriate planning and management mechanisms. The report also proposes the use of specific approaches to creative conflict resolution, whether the conflicts are matters of inherently subjective concern, or technical expertise.

Jurisdiction

The Ombudsman Act, s. 10,[3] authorizes investigation of a decision, recommendation, act, omission, or procedure used by an authority (Ministries and agencies of the Province) "that aggrieves or may aggrieve a person". S. 22 of the Act sets out a code of administrative fairness by which the elements referred to in s. 10 can be measured. S. 22 is a guide for the broad assessment of government acts or omissions; in specific instances, the principles of administrative law and practice must be applied, within the context of thorough investigation, the consideration of all perspectives, and reasonableness. These principles may include the need for a clear statutory foundation from which administrative policy is derived; a structured framework for the exercise of discretion to ensure consistency and certainty; a process for the meaningful participation of interested parties in decision making that affects vital interests; internal quality control mechanisms; and external review procedures which respect the requirements of due process.

It should be noted that, in addition to the authority exercised by provincial ministries mentioned previously, the shore areas most often occupied by aquaculturists are also the subject of federal jurisdiction, primarily for the purposes of fisheries habitat protection (Department of Fisheries and Oceans, administering the federal Fisheries Act)[4] and navigation (the Coast Guard, administering the provisions of the federal Navigable Waters Protection Act)[5]. While recommendations made by this office may have some impact on procedures employed as between the British Columbia and Federal governments, the matters of major concern which are addressed in this report are matters within (by law or by convention) Provincial authority. The Ministries of government which make administrative decisions relevant to the subject of this paper come within the Ombudsman's jurisdiction. This jurisdiction includes the authority to examine the merits of such decisions, and not merely the procedures followed in reaching them. It also includes the responsibility to recommend statutory change, where existing legislation or procedures create the potential for unfairness.

Scope of Study

The Ombudsman's office is perhaps in a unique position to deal with inter-ministerial issues such as aquaculture administration. This office does not take a position for or against aquaculture; rather, the mandate of the Office of the Ombudsman is to be an advocate of fairness, and to ensure that aquaculture policy is administered in a manner which is fair to all individuals whose interests are affected.

This study was commenced on the initiative of the Ombudsman as a result of complaints received concerning aquaculture regulation in B.C. The common thread running through the complaints received was a dissatisfaction with the manner in which aquaculture is regulated. Such concerns ranged from an apprehension concerning the apparent lack of legislation or regulations, to the manner and degree in which public information is received and acted upon. Ten operating or proposed finfish net-pen facilities were identified specifically by complainants; for certain facilities, a number of complaints were received, and some of these were representative in nature, incorporating petitions of protest signed by local residents. It should be noted that in matters addressed publicly by this office, a common principle is followed: the concerns revealed by complaints are generally held to be of greater significance than the number of complaints.

What became apparent to this office early in the study was that some of the existing problems had their origin in the lack of a well-defined, integrated, and inter-disciplinary system for the management of British Columiba's coastal resources. The border between land and ocean constitutes an area highly prized by a diverse range of human interests, ranging from residential and recreational to industrial and international trade. Many areas of the coast are sensitive to excess waste loadings, and their sometimes delicate ecologies may be considered a non-renewable resource.

The nature of this topic demanded a special approach from the Office of the Ombudsman. In addition to consultation with representatives of the various ministries involved, this office also produced a discussion paper, which was primarily an information gathering tool. Questions distilled from a preliminary examination of available literature and analysis of the complainants' concerns were incorporated into the discussion paper under three headings: land allocation, conflict resolution, and environmental and health impact. Almost 100 copies of the discussion paper were distributed to a broad range of interested individuals and organizations. These included both individuals whose interests were confined primarily to environmental aspects, and members of the aquaculture industry. In addition, contact was made with representatives of the State governments of Alaska, Washington, Oregon, and Hawaii, for the purpose of studying their coastal resource management systems and their attitudes toward and experience with aquaculture. Contact was also made with representatives of Canadian Maritime provinces where aquaculture legislation is in place, as well as the governments of Norway and Sweden, who provided valuable information on both the law and practice of fish farming. This office also had useful contact with the Natural Resources Management Program at Simon Fraser Unversity, and the Westwater Research Centre at the University of British Columbia.

No study of the current administration of Aquaculture in B.C. would be complete without a detailed review of the Report of the 1986 Public Inquiry into Finfish Aquaculture in British Columbia ("The Gillespie Report"). In response to concerns about the growth of the aquaculture industry advanced by the United Fishermen and Allied Workers Union (UFAWU) the Province of British Columbia instituted a moratorium on finfish aquaculture tenure issuance commencing October 31, 1986. At the same time, a commission of inquiry under the Chairmanship of Kamloops lawyer David Gillespie was established with a thirty-day mandate to investigate, report and make recommendations on the following aspects of marine finfish aquaculture operations:

(a) impact on commercial fishery operation, markets, and localized production - related facilities;

(b) potential and environmental impacts and effect on wild fish stocks;

(c) impact and involvement of local government and interest groups;

(d) government approval and monitoring procedures.

This office is not attempting to duplicate matters that were the subject of the 1986 Gillespie Report. However, implementation of the recommendations of that inquiry, which has been completed to the considerable credit of all Ministries involved, does not affect the appropriateness of further examination by the Office of the Ombudsman. This office has the relatively narrow focus of administrative fairness, while the Gillespie Report was more broadly directed to include social and economic policy concerns. Above all, the Ombudsman's Office seeks to be constructive in its involvement. It also notes the considerable and impressive dedication of Ministry personnel in applying their expertise, within the limits imposed by the institutional framework, toward achieving an equitable balance of interests in the regulation of this new and formidable industry.

Legislative and Statutory Framework

What makes net-pen aquaculture relatively unique is the process, both legal and physical, by which a private use is created of resources which have historically been treated as public. To understand the basis for this, it is necessary to review both the legal and physical aspects of the shore zone (see Appendix 3.). The upland zone (above the high-water line) remains primarily within the exclusive jurisdiction of the Province. Exceptions to this rule of ownership concern land which, by virtue of an overriding national interest, as expressed either in the Constitution Act 1867 (formerly known as the British North America Act) or decisions of the Court, is vested in the Federal Crown. Examples of lands under federal control are airport facilities, military bases, and subaquatic lands underlying offshore waters.

Title to the foreshore (that area between the high and low water line which is exposed at low tide) is vested in the province. No private ownership of the foreshore exists except in the case of a special Crown grant, or proof of a previous title that would predate the Province's entry into Confederation. However, private use of the foreshore can be granted as part of the legal rights conferred with a lease of aquatic land, which will by its nature include a right of possession extending to the high water mark.

It has long been established that, independent of Crown disposition by way of lease, the public has a right to pass on-foot without hindrance along the foreshore, and to navigate in ships over the foreshore when it is submerged at high tide. At the same time, private owners of upland property possess what are known as "riparian rights". "Riparian" technically refers to inland bodies of waters such as lakes or streams, and the term "littoral" is used to refer to the equivalent rights attaching to ownership of property which abuts on a sea or ocean shore. However, Canadian courts have used the term "riparian" in both contexts, and it is used in such a fashion as well by the Ministry of Crown Lands. For the purpose of this report, the most important riparian right is the right of access from the upland property to "navigable water" at each and every point along the junction between the foreshore and upland property.

The submerged or sub-aquatic land beneath the low tide mark is known as the "solum" and was originally treated as the property of the federal Crown. This notion arose in Canada first as a result of the English legal tradition that all seabed is vested in and under the control of the Crown, for reasons of national security. A further reason was the fact that the Canadian Constitution provided that public harbours, international trade and shipping, and offshore fisheries would be the subject of control by the federal Crown. Federal - Provincial concerns over ownership of the seabed or its resources did not arise until late twentieth century technology made it an issue. To some extent, the legal issue remains unsettled. However, as it is relevant to the practice of coastal aquaculture, this much appears clear:

(a) A decision by the Supreme Court of Canada in 1984[6] settled the dispute over "internal waters" and the seabed between the Mainland and Vancouver Island, by confirming jurisdiction of the province over the management and sale of all resources in this area.

(b) This does not mean that the federal government is without jurisdiction in the area classified as "internal waters". Jurisdiction remains over certain enumerated and significant public harbour areas and for the purposes of enforcing the Navigable Waters Protection Act and the Fisheries Act.

The primary function of the Department of Fisheries and Oceans in administering the provisions of the Fisheries Act is to prevent destruction of fish habitat, which includes critical spawning areas for salmon and other aquatic life. The Fisheries Act also prohibits the dumping or placement in any other fashion of "deleterious substances" which would have the effect of harming fish habitat or wild fish stocks.

The Coast Guard, as a component of the federal Ministry of Transport, enforces the provisions of the Navigable Waters Protection Act to ensure that any structures, whether erected from the seabed or in the form of a floating structure fixed with anchors, do not pose a threat or restriction on the right of free and safe navigation.

Currently, the federal Department of Fisheries and Oceans (DFO) requires fish farmers to possess a valid licence under Section 7 of the Fisheries Act. It has been argued, - although no fish farmers have to date sought to follow this point up - that the Department of Fisheries and Oceans has no constitutional right to insist upon such a licence. The Provincial Ministries of Crown Lands and Agriculture and Fisheries do not recognize the DFO requirement as a licence binding upon the Province; rather, DFO is treated as a referral agency, and its comments are carefully reviewed.

The Coast Guard establishes itself in the regulatory framework by requiring that fish farms of the floating net-pen variety, as well as long-line shellfish farms or any other aquaculture facility which would fix structures at a point on the surface of the water, obtain a certificate of exemption under the Navigable Waters Protection Act; this certificate declares that the installation design and location has been examined and found not to pose a restriction or hazard to coastal navigation.

From the above discussion, it can be ascertained that, because of the manner in which net-pen facilities are located, in reasonable proximity to the foreshore, the primary jurisdictional and regulatory functions fall to the provincial government. It is worth noting that on September 6, 1988, the Government of British Columbia signed a significant memorandum of understanding on aquaculture development with the Government of Canada. The agreement, amongs its other functions, formalizes the jurisdiction of the Provincial Government to licence, develop, manage and regulate the aquaculture industry in B.C.

Primary among the aquaculture regulators is the Provincial Ministry of Crown Lands, allocating aquatic Crown land under the authority of the Land Act. However, the Land

Act does not mention aquaculture and there are, to date, no Land Act regulations directed specifically at aquaculture. The Ministry of Crown Lands dictates procedures by way of guidelines set out in the Land Administration Manual. These guidelines govern grants of aquatic Crown Land by way of licence or long-term lease; current Ministry policy is to provide for lease terms of up to 30 years. The guidelines do not have the force of legislation.

Because of the overlapping jurisdiction of other Ministries to control certain aspects of aquaculture, the Ministry of Crown Lands utilizes a referral process by which details of proposed salmon farming operations are relayed to other ministries and levels of government for comment. The referral process can be seen, through directives from the Land Division, to be undergoing continual refinement; certain interest groups are now among the referral agencies.

The Provincial Ministry of Agriculture and Fisheries has been formally designated lead Ministry and has responsibility for reviewing and approving fish farm development plans. The title "lead Ministry" indicates that it has been given responsibility for development, coordination, and implementation of strategies dealing with aquaculture. It also provides technical information on the subject, and has undertaken a number of initiatives aimed at the promotion of orderly growth of the aquaculture industry.

Information received by this office from the Ministry of Agriculture and Fisheries indicates that both general and specific strategies are being formulated to assist in this aim. Proposals of interest to this office include:

(a) recognition of competing demands for coastal resources;

(b) streamlining of regulatory and reporting procedures;

(c) establishment of a provincial aquaculture permit or registration requirement; and,

(d) specific aquaculture legislation.

The Ministry also administers the provincial Fisheries Act[7]. As has been pointed out: "This Act deals not so much with the regulation and preservation of the wild fishery, as does its federal counterpart, but with those activities which are ancillary to the wild fishery, and more closely approximate matters of Property and Civil Rights in the province [reserved to the provinces by the Constitution Act 1867]".[8]

The Provincial Fisheries Act restricts its ambit to matters relating to licensing of fish processing operations and fish buying stations, and dovetails with companion legislation, the Fish Inspection Act[9], which provides for the maintenance of health and product quality standards in fish processing plants. From the beginning, the Ministry of Agriculture and Fisheries has been treated by the Ministry of Crown Lands as a primary referral Ministry; other referral agencies include the Ministry of Environment, local governments, and, to a lesser degree, the Ministries of Municipal Affairs, Regional Development (formerly the Ministry of Economic Development), and Health.

Apparently, no provincial agency other than the Ministry of Crown Lands has direct power to disallow an application for a coastal land tenure. Comments by Federal referral agencies are given considerable weight. The Coast Guard has the closest to an absolute veto by its power to declare a proposed floating structure to be a potential hazard to coastal navigation under the Navigable Waters Protection Act. It should be noted that restrictions imposed by other agencies do not affect the power of the Ministry of Crown Lands to issue a tenure. However, such tenure is granted subject to development restrictions or other laws which may be imposed by Federal, Provincial, or local authorities. One of the ostensible purposes of the present referral system is to identify locations in which such restrictions will be imposed and to advise the applicant accordingly, to prevent wasted effort.

Local governments have power to prohibit or regulate the siting of aquaculture facilities through their powers of local zoning (where their boundaries cross a water area, zoning will also apply to the surface of the water within that area under Section 963 of the Municipal Act). Development may also be subject to certain conditions. This may be done through official community plans and development permit requirements enacted under sections 945 and 980 of the Municipal Act.

Out of this inter-jurisdictional maze, one clear fact appears: no single level of government - local, Provincial, or Federal - emerges as having total jurisdiction.

The fragmented jurisdiction among local, Provincial, and Federal governments is not unique to aquaculture. Examples such as the Fraser River Estuary Management Program, in which mechanisms to form an administratively accountable framework were created to manage an exceptionally complex physical and social environment, will be considered later in this paper. It is the opinion of this office that aquaculture shares with estuary management the technical, social and legal complexity which demands imaginative and effective administrative solutions drawn from Canadian and international experience in integrated resource governance.

The importance of the physical subject matter - the shoreline of British Columbia - and of the institutional framework for its management is expressed well in the following excerpt from a paper entitled "Canadian Freshwater Lake and Marine Shore Areas - Uses and Management", presented by J.C. Day and J.G. Michael Parkes to the Shore Management Symposium in Victoria, 1978:

> "The shore zone is of critical importance to all Canadians for historical, economic, ecological and social reasons. It contains important food resources and transportation advantages upon which present lifestyles depend while supporting a range of habitats for fish and wildlife species which Canada has international obligations to preserve. The land-water interface supports most recreation activities. In recent decades the shore zone has been subjected to rapidly increasing urbanization, transportation, industrialization, and leisure-space demand. Canadian shore areas are becoming a focus of environmental and resource-use problems for many reasons. The most fundamental concerns current institutional arrangements. As Craine (Craine, L. 1972, final report on institutional arrangements for the Great Lakes II-4. Ann Arbor, Mich.: Great Lakes Basin Commission) observed, institutional deficiencies are not necessarily related to the agency or the personnel involved but rather to the institutional system, or lack thereof, in which they operate. For example, Canadian federal responsibilities are mainly water related, with the exception of certain federal lands. Land management to the low-water mark is essentially a provincial responsibility. But neither administrative system is usually broad enough to

> recognize that land and water management strategies applied separately do not deal with the symbiotic opportunities and constraints peculiar to the land-water interface. A fundamental problem relates to the fact that current institutional arrangements have failed to ensure that shorelines are an integral component of a coordinated land and water management system."

Complaints

Individuals who have approached the Office of the Ombudsman with complaints specific to aquaculture have focused primarily on two areas: the land allocation and tenure granting process; and environmental impact and health issues. Woven throughout these complaints was a common concern that basic principles of fairness had been bypassed, and that mechanisms for conflict resolution were either non-existent or ineffectual. In addition, it appeared to some complainants that Ministries were not following their own guidelines.

It should be remembered firstly that the following allegations reflect the perceptions of some coastal residents and do not, for the purposes of this report, reflect findings of fact by the Office of the Ombudsman. Secondly, the volume of complaints relative to the total number of aquaculture tenures, while significant to this office, is low. The number of new complaints has further declined, indicating perhaps the successful implementation of recommendations from the Gillespie inquiry.

Several examples of typical complaints follow:

(a) Residents living in the same bay as a proposed fish farm made extensive representations to both federal and provincial authorities as to the environmental inappropriateness of a fish farm in that particular location. They argued that depth and tidal flushing were inadequate to ensure that disease would not be transferred from cultured fish stock to nearby shell fish beds. Aesthetic considerations were also advanced, as well as recreational concerns due to a perceived degradation of local water quality - i.e. the residents no longer wished to swim in the waters adjoining their homes. They didn't like their access impeded, their views altered, or their peace disturbed. Despite considerable protest before, during, and after issuance of tenure, approval was granted for the fish farm to commence operations.

(b) An individual who owned waterfront property with a spectacular coastal vista awoke one morning to find salmon farm net-pens anchored off the shore of adjacent property. The individual was taken completely by surprise and resented the fact that the fish farm tenure application had been "fast-tracked" to allow commencement of operations, with little or no perceived public involvement. In spite of considerable protest after the arrival of the farm, the Ministry of Forests and Lands subsequently issued a long-term lease for operation of the facilities at that location.

(c) Application was made for a tenure in a sheltered bay of a small island community. Residents opposed the application on the basis that navigational safety and access would be impaired, there would be adverse environmental impact consequences, and coastal aesthetics would be harmed. There was also a general perception that the public involvement in the licence application process was not meaningful but was mere "window dressing" in that a decision to issue the tenure had been made regardless of local opposition.

More specifically, complainant perceptions and concerns can be grouped as follows:

(a) The land allocation process:

- lack of a clear publication of Ministry procedures and requirements;
- lack of a statutory framework clearly related to the subject of aquaculture;
- an "uncertain" referral process, with lack of meaningful participation by the parties to whom applications were referred for comment;
- the lack of a fair and effective appeal process;
- "fast-tracking", with no tangible observance of due process and a yielding to external pressures from "vested interests";

- lack of effective public notice of application for tenure and inadequate lead time for community planning and response;

- speculation in site acquisition could occur, whereby aquaculture operators would "tie up" a site with net-pen facilities for appearance purposes only, the ultimate purpose being to turn the site over at a profit to larger aquaculture firms.

(b) Environmental impact:

- adverse impact on aesthetics of the coastal environment;

- adverse impact on residential property values through alteration of the character of the coastline from wilderness to industrial;

- adverse impact on seabed marine life (non-motile organisms and flora);

- disruption of ecology: certain aquatic life forms might be removed or destroyed, while others might be attracted as predators to the salmon net-pens;

- perceived adverse impact of uneaten or excess fish feed and fish feces covering the seabed, and a general concern for the period of time necessary for sub-aquatic lands to recover to their former state;

- human waste disposal on self-contained "floating farms" (i.e. residential facilities attached to floating net-pens), and disposal of dead fish ("morts");

- lack of adequate regulation either to monitor or to control environmental impact by fish farms; and no appeal process by which affected parties can have their concerns adjudicated by an impartial, expert tribunal;

- the adverse impact of metal-based anti-foulant agents used on salmon nets to discourage marine plant growth on the nets.

(c) Conflict resolution:

- lack of any effective, or meaningful appeal process;
- lack of any mechanism for effective mediation or arbitration of individual and community concerns relative to aquaculture facility applications.

(d) Health considerations:

- effluent impact and water quality;
- possible intrusion of antibiotics into the food chain;
- a concern that farmed fish should be identified as such at the point of sale.

PART II

PRINCIPLES OF ADMINISTRATIVE FAIRNESS APPLICABLE TO LAND AND RESOURCE ALLOCATION, AND CONFLICT RESOLUTION

PRINCIPLES OF ADMINISTRATIVE FAIRNESS APPLICABLE TO LAND AND RESOURCE ALLOCATION, AND CONFLICT RESOLUTION

In the annual and public reports produced by this office, the common goal has been to articulate the core elements of fair administration. It is appropriate to review these basic principles, as they will form the context within which the administration of aquaculture is reviewed and assessed in this report.

The following elements have been distilled from the experience and expertise of this office in matters of administration and are, in essence, foundational aspects of administrative law, with some specific modification appropriate to serve their application within the context of resource management and conflict resolution.

(a) In matters affecting the rights and interests of Provincial residents, fairness, certainty, and predictability are best served through a legislative foundation by way of a specific statute, with enabling sections to provide for regulations.

Public trust and confidence in the regulation of an industry is best provided through the mechanism of a well-defined legal framework, especially in matters that may give rise to disputes among individuals with legitimate but competing interests. Where it is foreseeable that the rights of individuals and/or communities will be in conflict, the legal framework should be established by legislation, to which interested parties can refer in planning their affairs or resolving their disputes. Government performance and accountability then becomes measurable.

(b) An opportunity for meaningful participation of those individuals or groups whose interests are affected, directly or indirectly.

Meaningful participation means that individuals, groups, local government, or any other party or parties with significant and legitimate interests will be recognized in the planning, implementation, and conflict resolution processes. It implies that their representations will receive careful consideration and will be accorded due regard consistent with the importance of the individual's interest. In other words, a duty is placed upon the decision maker, insofar as is reasonably possible, to appreciate fully the significance of and the foundation for the various individual or group interests.

(c) A structured framework for the exercise of discretion.

The structuring of administrative discretion in decision making is essential to assure public confidence, and is most effectively achieved through the application of objective process and assessment criteria which are set out in legislation, regulations, and published official Ministry policy documents.

When administrative discretion is exercised in areas where potential conflict exists between private and industrial interests, there will always be suspicion that either the "vested interests" or the "squeaky wheels" have inordinately or improperly influenced the system for decision making. The publication of clearly defined criteria by which discretion is to be exercised, with clearly defined parameters such that similar situations are treated consistently and different situations are treated individually, is essential.

(d) Policy guidelines, rules and regulations promulgated by Ministries must be clearly defined in plain language and publicly available.

Public confidence is bolstered when the public knows and understands the decision-making process.

(e) Adequate and appropriate reasons for administrative decisions with significant impact should be provided in written form, whether required by law or not.

This enables parties to measure accurately performance against policy. Individuals are able to determine clearly the basis upon which the decision was reached, and are less likely to challenge the decision, particularly if the reasons provided make it clear that the available evidence was considered fairly. The decision thus made and articulated is also more likely to withstand later scrutiny by an independent review agency or tribunal.

(f) Internal review procedures that allow an affected individual to understand clearly the basis upon, or process by which the original decision was made, and to advance quickly and efficiently his

opposing views to an individual who has power to act, are useful and necessary to ensure that errors, such as incorrect or inappropriate interpretation of policy and regulatory requirements are either speedily rectified or openly justified to the satisfaction of all parties.

Whenever administrative decisions are made which are not consistent with the desires of parties who have legitimate interests, there exists the possibility of suspicion and resentment that the process was biased in favour of the party whose interests were apparently favoured. An effective internal review system in which individuals can participate and by which the rationale for a decision can be made known is the foundation for dispelling such suspicions.

(g) **External review procedures - appeals: an independent appeal process which is available without excessive cost is a vital aspect of assuring public confidence in the integrity of the regulatory process.**

The appeal body should be expert in the technical area being administered, and as well should have at least one member well versed in the principles of administrative law. The appeal body must be truly independent with wide powers to hear evidence, call witnesses, and, if necessary, to substitute its decision for that of the administrative body in appropriate cases.

Section 59 of the Land Act is an example of an appeal system which is inadequate. The Minister appoints one of his internal staff members to hear the appeal if the Minister considers it advisable that the appeal be heard at all. An external appeal to court may be exercised only after the s. 59 appeal has been conducted, and on questions of law only. In other words, evidence may not be presented and reviewed on the merits at the "external appeal" in court.

(h) **An integrated, inter-disciplinary, and inter-ministerial planning process, based on a specific enabling statute and incorporating a long-range conception of the physical areas being administered or managed and which makes ample allowance for meaningful public participation at the beginning of the land allocation process, is basic to the achievement of administrative fairness; its application should extend not only**

to maximizing benefits which may accrue from the development of a particular industry, but also to avoiding, rather than the more difficult and time-consuming resolving, of conflicts.

Before individuals and agencies can decide on the methods used to achieve certain goals, they have to decide where they want to be. This entails the creation of a long-range vision or concept. The translation of the vision into practical goals, objectives, and mechanisms for attracting public participation and dealing with public disputes, must be based on an overall framework for planning which respects diverse interests, mandates and expertise. Useful examples with practical emphases include: s. 90.58.020 of the Washington Shoreline Management Act of 1971, s. 302, Coastal Zone Management Act of 1972 (both found in Appendix 6); and "A Living River by the Door", documenting the proposed management system for the Fraser Estuary. Integrated planning allows each party to participate in the decisions which will affect its interests. In the case of industrial or commercial development in areas in which such development has previously been rare, the planning component becomes critical. The time period which may be allowed for publication of an application for Crown land, or even a public hearing, can be entirely inadequate for communities properly to address properly issues and concerns which will likely be manifested over the life of the industrial or commercial project. Since most developments of this nature are established with a long term private plan, so also should the local community be able to engage in long-term planning on a cooperative basis with provincial authorities. This will help to ensure that industrial developments on Crown land do not occur without the careful consideration that a planning process can provide, by way of sufficient lead time and a measure of informed anticipation.

(i) **An efficient mechanism for the independent assessment of environmental or social impact, in instances where the ability of the parties to make reasonable or accurate impact predictions is limited, and the magnitude of an unexpected adverse impact may be significant.**

There may be instances where risks, minor to major, will be unavoidable, and a mechanism for securing information from a diverse range of interests will not be adequate in creating an information base for decision making sufficient to minimize risks. Where an error in siting of an industrial facility could result in major injury to a fragile resource, (e.g., the location of a chemical processing plant relative to shellfish harvesting areas) a system of impact assessment which recognizes public interest and expertise as a valuable information source should be fostered. This is not formal conflict resolution, nor is it purely a planning matter. Rather, administratively fair systems of impact assessment should be directed at the unbiased acquisition of the best available data and predictions, which can then be applied to the critical questions of where, when, how, and whether or not to proceed with a project. Integral to the process and useful in enhancing the cost-effectiveness of the process, is the establishment of a threshold level at which a social or environmental impact assessment should be conducted.

The basic components of an environmental or social impact assessment which involves public participation may include, and should account for, the identification of the issue and determination of interests; the procedure for public notice and location and timetable of the proceedings; the style of hearing to be conducted; the access of parties to expert assistance, and their ability to obtain necessary relevant information. The sophistication of the parties for the type of hearing being conducted, and the procedure for appointment of the assessor or assessors are also important elements of such a process.[10]

A process to be avoided is the effect of experts retained to present data in a fashion which will advance only the interests of their client. Where such a presentation is made in a judicial (court) or quasi-judicial (administrative tribunal) environment, there remains the prospect that the best answer may be distilled from conflicting evidence; this is the heart of the adversarial system. A more satisfactory initial approach, consistent with an ultimate finding which is more likely to secure a lasting resolution, is contained within the concept of consensual dispute resolution. In its most basic form, the concept requires that opposing experts be required to create a consensus among themselves as to the accuracy of available data and areas in which legitimate questions remain, and an appropriate approach to the answering of those questions.

Any system of environmental or social impact assessment should be, as far as possible, time and cost efficient for all parties involved. If such assessments become a barrier to participation then the ultimate goal of administrative fairness may be defeated; meritorious projects may be abandoned because the proponents cannot afford to risk inordinate expense in an application procedure, the results of which might be uncertain. Alternatively, opponents wishing to raise legitimate concerns and establish their case might not be able to finance the investigation necessary to produce the required evidence, and a potentially damaging development might proceed unchallenged.

PART III

INITIATIVES IN BRITISH COLUMBIA: A REVIEW AND COMMENTARY ON CERTAIN RECOMMENDATIONS AND ACTIONS RESULTING FROM "AN INQUIRY INTO FINFISH AQUACULTURE IN BRITISH COLUMBIA".

(THE GILLESPIE REPORT)

THE GILLESPIE REPORT AND RESULTING INITIATIVES.

On October 31, 1986, a moratorium was imposed by the Honourable Jack J. Kempf, Minister of Forests and Lands, on the issuance of finfish aquaculture tenures. Six days later an inquiry into finfish aquaculture was established under the chairmanship of David Gillespie. Gillespie's mandate was to consult with government agencies, obtain public submissions from interested parties, and issue a report with recommendations to the Ministry of Forests and Lands within just 30 days. The moratorium was a result of concerns raised by the B.C. Fisherman and Allied Workers Union (UFAWU). The UFAWU called for a moratorium to allow for a full review of the impacts of the salmon farming industry, given the rapid increase in Crown land applications for finfish aquaculture during 1986. Four public meetings were held and 258 submissions (letters, formal briefs, and oral presentations at public meetings) were received.

The result of the enquiry was 52 recommendations. Recommendations touching on matters within the jurisdiction of this office are listed below, followed by a brief comment on government initiatives which have been effected to date. The sections of Gillespie's Report which have not been commented upon in this Report deal with matters which are exclusively technical or legislative in nature, and hence not appropriate for comment by the Ombudsman's Office.

Gillespie's Recommendations: Excerpts and Commentary

1. (Recommendation No. 4.1.2) "The government should develop a provincial aquaculture policy where it clarifies provincial direction, agency roles, and the responsibilities of both government and the private sector for the industry".

   Comment: Gillespie views "...the lack of a strong provincial statement...as detrimental to the orderly and efficient growth of the industry". This observation is accurate and incisive. A strong, clear statement of policy is indeed necessary; however, it is the opinion of this office that it is appropriate for such policy to find expression in legislation. There are virtually no Provincial statutes or regulations which have been created in direct response to the growth of the industry. This has created a situation in which anyone wishing to establish a fish farm, or object to a fish farm, must contact the appropriate Ministry, which may in fact have control over only one aspect of the farming operation, to find out what the government policy is. No formal and binding appeal system exists to provide a remedy for grievances of any of the parties involved in the process.

2. (Recommendation No. 4.1.3) "The government should establish an Aquaculture Advisory Council from key agencies and interest groups." This advisory council was established in mid-1987. Gillespie proposed that the council be the vehicle for direct involvement of the industry - he believes this is critical for development of aquaculture - as well as providing the opportunity for other interested groups (commercial fisheries, Native Indians, recreational groups and Fisheries Council of B.C.) to participate in the development of government policy.

   Comment: This recommendation is an important step in the right direction, and has been fully implemented; the Advisory Council has been established and meets periodically to discuss issues of concern to its members, who represent a varied cross-section of coastal society, from fish farmers to local government to environmentalists. However, the non-binding recommendations of the Council will likely be inadequate to achieve the same degree of administrative fairness as an Act which is the product of public debate with specialized submissions, published regulations, and a binding appeal mechanism such as an aquaculture appeal board. An Aquaculture Steering Committee has been in existence since 1985, and exists to coordinate aquaculture policy, research priorities, planning and procedures among the various interested Ministries. Further comment on the Steering Committee is contained in Part V of this Report.

3. (Recommendation No. 4.1.6) "The government should support greater cooperation with local government in promotion, planning and approval of finfish aquaculture."

Comment: Gillespie notes that some local governments, caught in the middle between the industry and local residents who object to the presence of a fish farm, are unable to direct the proposal to more socially acceptable locations, while some other local governments are eager to attract the economic benefits of fish farming. Gillespie suggests that such provincial cooperation should include funding for promotion and planning of aquaculture, provision of model by-laws, and participation by provincial resource agencies in local planning. The mechanisms of zoning by-laws are only effective in providing a significant measure of involvement and local government control in the referral and approval process if they precede aquaculture development. This is because aquaculture operations will qualify as non-conforming uses if they are granted tenure before such local regulations are in place. Many operations were established before local controls were in effect.

4. (Recommendation No. 4.2.1) "The government should expand its public information programs to provide a broader range of services and information access."

   Comment: This is an important proposal. However, this would be most effective in promoting administrative fairness if it was combined with a published Act and regulations to which individuals, industry members, and interested parties could be directed in response to their question, "Isn't there a law governing this?"

5. (Recommendation No. 4.5.2) "The provincial government should establish a mandatory environmental monitoring and data gathering system for each aquaculture site and surrounding area, the results of which should be submitted on a regular basis for review of changes in environmental quality."

   Comment: Gillespie states, "Environmental monitoring represents a major deficiency in the regulation of finfish aquaculture". The government has taken steps to initiate such a program which will likely be established some time in 1988 under new regulations passed pursuant to the Waste Management Act. In the interim, voluntary monitoring is being encouraged. Draft regulations were circulated in July, 1987 which exempt aquaculture operations from having to obtain a permit or approval under the Waste Management Act as long as requirements of the regulations for disposal of waste and provision of information to the Ministry of Environment are met. However, the onus is apparently on the Ministry to make investigations and demand samples to determine whether the aquaculture operation is causing pollution. There is a duty on the fish farm operator to report "a deposit of a substance causing pollution at the site of the operation" and to take appropriate action. This vaguely worded section would provide a doubtful basis upon which to initiate a prosecution or terminate an aquaculture lease or licence.

More recently, "Draft Environmental Guidelines for Marine Fish Farms and Ancillary Operations" were produced by the Ministry of Environment through the joint efforts of personnel in Waste Management, Water Management, and Planning and Assessment branches. These guidelines form the framework within which amendments to the Waste Management Regulation will be produced. The guidelines are being assessed and refined through an inter-ministerial referral process. This office notes the potential concerns in commenting upon internal documents not yet intended for public distribution, and which have a complex technical component. Therefore, it is appropriate at this time to limit any observations to a review of the elements which this office would consider useful as components of the Waste Management Regulation. Of necessity, some of these elements are presented in the form of questions, due to their inherently technical nature. They include:

(a) What is the fairest and most effective method for determining which aquaculture facilities should require a Waste Management permit? If a numerical limit such as fish inventory, number of net-pens, or feed tonnage is used to establish a permit requirement, can the limit be avoided through restructuring of facilities or operations?

(b) How will enforcement be effected? If termination of tenure is to employed as a sanction, will a determination by one Ministry (e.g. Environment) be binding on another Ministry (e.g. Crown Lands) which holds the effective power to carry out the sanction? What mechanism can be employed to resolve multi-party disagreements over technical issues? It is conceivable that two or more Ministries, the net-pen operator, and neighbouring landowners could all be at odds over the nature and impact of an alleged discharge from a fish farm.

(c) If a waste management permit is not issued (i.e. not required) for a specific facility, what avenue will be available to adjoining or downstream shore residents to prevent a net-pen operator from causing, in the residents' view, fouling or pollution of the water surface or shoreline? An appeal to the Environmental Appeal Board is available at present only in instances where a waste management permit has been applied for or issued to the net-pen operator. While the Waste Management Act affords branch personnel wide powers to investigate and control activities causing pollution, any action to be taken remains solely within administrative discretion; no impartial review of the circumstances is available to affected parties, other than the rather costly and lengthy alternative of a court action.

(d) What level of analysis is appropriate when impacts of proposed aquaculture developments are being assessed? Is review of the Marine Fish Farm Development Plan adequate? Is the assessment of a proposed site for "biophysical suitability" equivalent to performing an evaluation of probable environmental impact, or is it aimed simply at determining capacity of the site to sustain net-pen facilities over the long term? Can environmental impact assessment mechanisms be created and applied without inordinate expense or delay? (i.e. can assessments be carried out within the normal time frame required for approval of tenure, or within a reasonable period beyond?) Will public participation be recognized in an impact assessment process?

This office notes the thorough and excellent work undertaken by the Ministry of Environment in preparing new waste management regulations for fish farms. The intent of the previous four paragraphs has been to articulate fairness concerns as they relate to matters of public confidence and public involvement in the development of administrative systems for the governance of the aquaculture industry.

It is the opinion of this office that public involvement in environmental impact monitoring or evaluation, through an independent appeal process, promotes high standards of administrative fairness in the management of the shore zone, which may be appropriately regarded as a common public resource. In addition, a cost-effective system for environmental impact assessment benefits not only resource managers but the aquaculture industry as well, through optimum site selection; public opposition to fish farm operations should also decline if the requirements for environmental assessment and monitoring can be seen to be both rigorous and reviewable.

It is worth noting that officials of the Washington State Department of Ecology are nearing completion of a programmatic environmental impact statement which should significantly reduce the time and expense of measuring the potential consequences of proposed fish farm operations. (See Part IV (F) later in this Report)

6. (Recommendation No. 4.5.4) "The government should continue the use of a distance guideline to separate fish farms, and should apply this guideline to separate fish farms from shell fish aquaculture operations."

   Comment: This recommendation has been adopted by the government and a distance guideline has been established at 3 kilometres between farms, up from the previous .918 kilometres (.5 nautical miles). Gillespie states that any decision to reduce this distance should be based on specific site factors.

Spacing of fish farms relative to residential settlements or biologically sensitive areas is another matter in which legislated avenues for public or expert involvement, and an independent appeal process, would be useful in securing administrative fairness to the benefit of local governments, land owners, and the aquaculture industry.

7. (Recommendations No. 4.6.1 to No. 4.6.6) Gillespie recommended a coastal resource identification study (CRIS) be carried out in a number of areas with utmost speed. This has been accomplished in the desired time frame, with a commendable and concerted effort by members of the Ministry of Forests and Lands, as it was then known. The Ministry has released its findings in the form of maps with the subheading "Aquaculture Opportunities". A number of agencies, communities, and special interest groups were apparently consulted in the preparation of the CRIS, and invited to submit mapped information with statements outlining their preferences as to locations where aquaculture devlopment should be restricted or prohibited. CRIS was therefore designed primarily to determine where aquaculture should not go; thus, it serves as a conflict avoidance mechanism but cannot provide a comprehensive foundation for aquaculture planning.

In recommendations 4.6.1 to 4.6.6 Gillespie also recommends the discontinuation of issuance of aquaculture tenures adjacent to provincial parks and recreation areas, and further says that local government should be encouraged to develop or refine local zoning by-laws to address finfish aquaculture operations within their boundaries. These recommendations are reasonable; nonetheless one keeps returning to the central theme from the standpoint of administrative fairness, namely, the potentially uncertain nature of government policy, for which exemptions can be created through ministerial prerogative, as compared to a disciplined system of statute-based regulations which would provide a mechanism for case-by-case appeal.

As to the question of aquaculture regulation by local government, the Ministry of Agriculture and Fisheries' pamphlet "Fish Farming: B.C.'s New

Venture on the Coast" states, "...but it is at the local level that public input has its biggest impact...public hearings are required before any official community plan or zoning by-law can be adopted or amended". Persons opposed to fish farms can, "...as with any use of Crown land,...write directly with their concerns to the Ministry of Forests and Lands, Lands Division". Several problems become apparent when one considers this approach to dispute resolution and the powers of local government:

(a) A public hearing is not the same as an appeal to an independent body; local public hearings address matters of planning and zoning but, as stated earlier, these must precede aquaculture development to be effective. They do not exercise power retroactively, unlike an appeal tribunal;

(b) One's democratic right of writing to the Minister or to any ministerial official is not the same as a right of appeal. A Ministry cannot be expected to act as arbiter of an appeal of its own decision;

(c) The Ministry goes on to say in the previously mentioned pamphlet that, "...noise, unsightliness, garbage disposal, and other community nuisance factors that could be associated with a fish farm are matters that may be subject to regulation by local government".

While the local governments may have jurisdiction in these areas, fish farms appear to be operational anomalies over which, because of overlapping jurisdictions by a variety of federal and provincial agencies, it is difficult for any one body to regulate specific impacts.

8. (Recommendations No. 4.7.1 to No. 4.7.5) On the subject of referrals and advertising in the aquaculture tenure approval system, Gillespie recommended continued use of the inter-agency referral system as a primary tool for conflict resolution. He also recommended that the government expand its lists of referral groups, increase the time available for response,

establish subsequent notification practices for referrals, establish an agreement with federal agencies respecting siting of tenures, information requirements, documentation of concerns, and importance given to referral comments. Also recommended was that the provincial Lands agency review its practices involving advertising and notification for prospective finfish aquaculture operations, and place greater emphasis on local government involvement to the finfish aquaculture referral process.

Comment: All of these recommendations are logical and would tend, if fully implemented, to increase the prospects for administrative fairness within the present system. The primary question is, however, whether the present system of an inter-agency referral process is inherently fair.

There is the risk that, by the time a user conflict surfaces, the parties who effectively possess either the influence or the power will be committed to a certain course of action. Indeed, Gillespie states (Recommendation No. 4.7.1), "...within areas where coastal resource identification studies are in place, it will be more appropriate to give greater weight to referral comments dealing with environmental characteristics of proposed sites and special management considerations rather than user conflicts". Such a statement presumes that identification studies and conflict resolution mechanisms will be utilized in a manner which reflect high standards of administrative fairness. This may be an unwarranted assumption given that good intentions and honest, competent eforts by Ministry personnel are sometimes inadequate in producing a decision-making process which is demonstrably fair.

9. (Recommendation No. 4.9.4) The provincial government should review and expand its legal tenure documents for finfish aquaculture.

Comment: Gillespie suggests that such items as mandatory site monitoring and reporting, aesthetic and visual standards and demarkation of tenure area be incorporated into the legal tenure documents. This is an excellent and logical recommendation. However, by Ministerial directive any requirement can be deleted from a form; likewise, even if the requirements remain standardized, by Ministerial prerogative an application can be allowed, notwithstanding that certain established criteria may not be met in that specific instance. Greater certainty is provided when forms are prescribed by regulations created pursuant to statute; the process itself requires publication, and, in the case of statutes, an opportunity for public debate.

10. (Recommendation No. 4.10.1) "The present provincial agency approval framework should be maintained." Gillespie goes on to say that "...establishment of a 'single window' agency [which is apparently desired by the industry] would, unless accompanied by a major legislative overhaul, result in one additional level of contact, further time requirements, and major staff reallocation. "To be effective, the single window agency would have to be a neutral, rather than an advocate agency. The consolidation of legislative requirements affecting aquaculture siting and approval (e.g. an Aquaculture Act) would create anomalies and inconsistencies among remaining programs of the affected agencies". (emphasis added).

    Comment: Mr. Gillespie's arguments against a single window agency may also be treated as eloquent arguments in favour of statutory regulation. Such a framework is necessary to maintain public confidence in an area where it may be seen that individuals with influence might be ignoring the rights of certain individuals or communities with legitimate interests. As the industry grows it is conceivable that the situation might worsen, given the economic advantages of utilizing economies of scale (large or multiple sites) near populated areas, which are often the scenes of greater user conflicts.

    Gillespie is correct when he says that the single window agency would have to be a neutral rather than an advocate agency, as it would have the formidable task of being the "central switchboard" for a number of conflicting or competing interests. However, this would not

> prevent Ministries such as Agriculture and Fisheries, or Regional Development, from engaging in promotional efforts and programs. A neutral agency, with published statutory standards, and an appeal mechanism would provide the authority that is needed for government to administer tenures and be held accountable on a case-by-case basis, as well as provide the flexibility that will be needed, given the reality that no two aquaculture operations and environmental circumstances are ever entirely the same. If such a system were to be put in place, then recommendation 4.10.2, that the role of the Ministry of Agriculture and Fisheries as lead provincial agency be clarified and focused, may become redundant. The only "lead agency" would be the Ministry or Board designated by statute.

Implementation of the recommendations of the Gillespie inquiry has been swift and comprehensive. Indeed, for the most part, the recommendations have been accepted without resistance and applied verbatim, resulting in significant improvements to the process. Policies of the Ministry of Crown Lands respecting applications for tenure, and the tenure documents themselves, have been reviewed, revised and expanded to incorporate the Gillespie recommendations. However, this cooperative action by various Ministries, undertaken in the utmost good faith, does not alter or alleviate the additional concerns of this office expressed both in the foregoing commentary on the Gillespie recommendations, and in the recommendations contained in this paper.

PART IV

AQUACULTURE IN OTHER JURISDICTIONS - A BRIEF REVIEW WITH OBSERVATIONS RELATIVE TO THE BRITISH COLUMBIA EXPERIENCE:

NOVA SCOTIA

NEWFOUNDLAND

NEW BRUNSWICK

SWEDEN

NORWAY

WASHINGTON STATE

ALASKA

OREGON

HAWAII

COMMENTARY ON THE U.S. EXPERIENCE

A SUMMARY REVIEW OF THE REGULATION OF AQUACULTURE IN OTHER JURISDICTIONS

To appreciate the challenge facing Ministry personnel in their task of regulating a new industry with complex social and environmental conflicts, it is appropriate and useful to look to other provinces and countries to review their unique responses to marine aquaculture.

The Maritime provinces have taken the lead in the creation of legislation to govern the industry as far as their jurisdiction will permit. On the other side of the Atlantic, Norway and Sweden have proclaimed the importance of aquaculture as a commercial component of the social fabric of their coastal communities. On the Pacific side, the States of Alaska, Washington, and Oregon have all established coastal management systems worthy of study, especially for the manner in which local communities are given a powerful role in the planning and regulation of shorezone development. The presentation which follows is cursory; references for further inquiry are provided in the bibliography.

A. Nova Scotia: SUMMARY AND ANALYSIS OF THE NOVA SCOTIA AQUACULTURE ACT (1983)

The following commentary contains verbatim excerpts which are for the most part self-explanatory. Only the major components of the Act are addressed, in order to provide a foundation for comparison with other regulatory regimes.

The primary function of the Act is to protect aquaculture operations from harmful pollutants. This is set out in plain language in the objects and purposes section of the Act, which purports to encourage and promote aquaculture by:

i) Providing an environment in which aquaculture may flourish;

ii) establishing the quality of water so that maximum aquacultural produce may be harvested; and

iii) providing those persons engaged in aquaculture with a property right in the area licensed or leased and in the aquacultural produce being cultivated.

> The Governor in Council may make regulations which include designating aquaculture development areas, imposing conditions and restrictions on the conduct of aquaculture or other activities in an aquaculture development area, and establishing water quality standards for water shed areas draining into an aquaculture development area.

Consultation with five related and relevant ministries is required before the Minister establishes an aquaculture development area; consultation with boards, agencies and commissions is required as prescribed. In addition, notice of the intended action is to be given and provision made for public hearings, advisory committees, or other vehicles for the expression of public opinion regarding the proposed designation.

The Ministry of Fisheries is the lead agency, and the official who conducts the public hearings is an appointee of the Minister of Fisheries.

Notice of the intended action and details on the public hearing are required to be published in a daily and weekly newspaper, if any, circulating in the municipality containing or adjacent to the area affected.

The Act requires the Minister to do a baseline study of deleterious substances in watershed and adjacent marine or brackish waters. A certificate of such substance levels is then produced and becomes prima facie evidence under the Act of the levels of such substances; the lease holder receives a copy of the certificate. The study forms the basis for later analysis of any pollution of the water, and for assembling the necessary evidence to invoke sanctions against the polluter.

An aquaculture licence from the Minister is the basic requirement; on Crown Land, an aquaculture lease is additionally required. The licence in an aquaculture development area carries with it the exclusive right to the use, for aquacultural purposes, of the water column and sub-aquatic land described in the licence. The licence or lease application requires all basic information to be disclosed concerning the nature of the operation and its technical requirements, as well as information on the quantity and source of fresh water, if any, required for the proposed operation, and the nature and extent of any deleterious substance expected to be deposited from the proposed operation, if any, and details of what measures are expected to be taken to reduce the deposit of these substances.

Aquaculture licences for private land are issued only to the owner or lessee of the land. In other words, there has to be a registrable interest in the land.

It should be noted that the Minister is not required to grant a licence. The licence may be terminated by the Minister at any time if false representations have been made in the application, or the holder of the licence does not show due diligence in fulfilling the terms and conditions of the licence.

The species of the aquatic flora and fauna for cultivation, its introduction, and feed stock flora and fauna are all subject to preliminary inspection by the aquaculture inspector, who has the authority to deny permission for use.

Escaping aquatic fauna remain the exclusive property of the licence or leaseholder while they are within 100 metres of the licenced or leased area boundaries.

The aquaculture inspector appointed by the Minister has full powers to enter and search aquaculture operations (except a dwelling) and make such tests and inquiries as may be relevant to the investigation. Every person responsible for an aquaculture operation is required to furnish information as requested by the inspector. Inspectors may also quarantine and destroy aquatic flora and fauna, seed stock or feed stock if it is infected with disease or parasites, or not authorized for introduction by an aquaculture licence or lease.

A registrar of aquaculture is also appointed, who is required to keep records and documents, which are open to public inspection, with the exception of such information as is provided to the registrar by the licencee or lessee, and in respect of which the licencee or lessee has asked the registrar to maintain confidentiality. (e.g. financial statements)

Comprehensive regulations may be promulgated pursuant to the Act.

With the emphasis of the Act on protection and promotion of aquaculture, and the water quality on which the fish farming operations depend, a question emerges: Could a fish farm degrade other waters or shorelines without suffering harm itself? This is a technical question within the jurisdiction - insofar as the question arises in B.C. - of the Waste Management Branch of the Ministry of Environment. It is the opinion of this office that legislation which purports to protect water quality should provide that aquaculture operations be either protected or regulated, as appropriate, such that a farm fortunate enough to benefit from strong tidal flushing is not able to produce waste discharges with impunity, if the potential problem is simply transferred to another point on the shoreline. By the same principle, commercial fish farmers should be able to rely on timely administrative intervention to protect their operations from activities causing pollution damage.

B. Newfoundland

The Newfoundland Aquaculture Act, came into force on June 19, 1987. It is similar in substance to the Nova Scotia Act, with some significant differences:

1. The objects of the Act are slightly broader and more balanced in focus, in that reference is made to minimization of resource use conflicts and maximization of cooperative opportunities. The purposes of the Act are given as governing the conduct of aquaculture in Newfoundland in such a manner as to:

   (a) Promote, in consultation with the private sector, the prudent and orderly development of an aquaculture industry;

   (b) Secure the property rights of those carrying on aquaculture;

   (c) Minimize conflicts with competing interests and uses; and

   (d) Assist in consultative and cooperative decision making within the province and between the government of the province and the government of Canada.

2. The Minister has broad authority to incorporate into the licence terms of a development plan, standards relating to the utilization, stocking investment in, or production of, the aquaculture facility, and provision for access by continuous land owners through a site. Measures may also be directed to prevent the escape of aquatic animals and development and spread of disease and parasites, to minimize the risk of damage to the environment or other aquaculture facilities.

3. No aquatic plants or animals may be introduced into or transferred to a body of water or aquaculture facility unless the provisions of the Environmental Assessment Act have been complied with, meaning that the impact of introduction has been assessed in accordance with the Act. It should be noted that this provision may be bypassed if the Minister responsible for the Environmental Assessment Act determines that no risk is posed to the environment or natural stocks of aquatic plants or animals as a result of the introduction to the certain body of water or aquaculture facility. The Aquaculture Act requires that such a determination by the Minister responsible for the Environmental Assessment Act be based on an assumption that the plants or animals will escape into the surrounding environment.

Like the Nova Scotia Act, the Newfoundland Aquaculture Act provides for the establishment of an aquaculture registrar and registry, and an Aquaculture Inspector with broad powers of investigation and quarantine or destruction of stocks. Broad powers are given to the Minister for establishing regulations to govern effectively the conduct of the industry. These regulations may be established "respecting methods of handling, buying, selling, holding in possession, offering or advertising for sale, processing and maintaining the quality of aquatic plants or animals". This regulation would presumably allow the Minister to require farmed fish to be designated as such for the information of consumers at the point of sale.

Section 7 of the Aquaculture Act requires every licencee to report forthwith to the Minister or an aquaculture inspector any outbreak of disease or parasites. Like the Nova Scotia Act, the Newfoundland Aquaculture Act clearly establishes property rights in the cultured plant or animal product while it is in the possession of the licencee, and as well if the fish escape to within 100 metres of the leased site boundaries.

The manner in which any public input shall be received by the Minister for the purpose of assisting in decisions as to whether to grant an aquaculture licence may be determined by regulation. This does not require the Minister to engage in public consultation or hold public hearings unless the Minister deems such a procedure to be advisable and institutes the procedure by way of regulation.

Due to the fact that the legal framework for aquatic lands in Newfoundland is similar to that for aquatic lands on the coast of British Columbia, a lease of the water column and the seabed for the purpose of laying down anchors for the netpen facilities is required from the Department of Forest Resources and Lands. Because of the overlapping jurisdiction in coastal lands (as previously described), the Department of Forest Resources and Lands sends applications to the Aquaculture Registrar of the Department of Fisheries. The registrar then initiates a referral process to the Federal Department of Fisheries, Federal Ministry of the Environment, and the Coast Guard.

It should be noted that one apparent deficiency of the land allocation and aquaculture licence scheme in Newfoundland is reflected in the lack of an effective independent appeal system in either legislation, regulations, or official policy.

C. New Brunswick

On May 17, 1988, the Honourable Douglas Young, Minister of Fisheries and Aquaculture, introduced for first reading Bill 63, the Aquaculture Act, in the New Brunswick legislature. Some excerpts from his introductory statement are noted below:

> "The Act recognizes that the future of aquaculture development must be orderly so that boom-and-bust expansion does not occur and leave people out of work a few years from now. Failure to approach the industry with a rational development strategy will jeopardize the long-term viability of aquaculture in New Brunswick, as has often been the case in other jurisdictions.
>
> The Act sets down the legal authority of the Minister of Fisheries and Aquaculture to promote, regulate and manage all aspects of the industry from the backyard to the marine culture of salmon, other finfish and shellfish from fresh-water hatcheries to nutrition and harvesting of aquaculture products.
>
> ...The Act sets the framework for encouraging an industry where sound management practices ensure minimal losses and minimal interference with traditional fisheries and other affected interest groups.

> ...The public consultation process which will occur over the summer months is an important opportunity for the public to become involved in the formation of this Act. If the public identifies major changes that are required, those changes will be made before the Act is proclaimed. Those who participate in the public consultation process will be contributing to the final draft of the legislation and will obviously have an impact on its rules and regulations."

It is conceivable that the proposed Aquaculture Act of New Brunswick may undergo significant revision as it moves toward 3rd reading and proclamation. However, in its present form it appears to represent a solid attempt to synthesize the best elements of aquaculture legislation in New Brunswick's neighbouring provinces.

Some of the major elements of the Act are reviewed briefly below:

1. An Aquaculture licence is the basic requirement of the Act; a Registrar is appointed by the Minister of Fisheries and Aquaculture to issue licences in accordance with terms and conditions established by regulations passed pursuant to the Act.

2. The Registrar may impose conditions when issuing, amending, or renewing an aquaculture licence; the conditions mentioned in the proposed Act relate to adherence to aquaculture site development plans, site utilization, stocking densities, production, environmental degradation prevention, prevention of escape of live produce, disease or contaminant transmission prevention, and compliance with health, grade, and genetic standards for produce.

3. Inspectors may be appointed by the Minister to enforce provisions of the Act. An inspector under the Act has the powers of a peace officer.

4. The Registrar may suspend or revoke an Aquaculture licence as a result of false information supplied by an applicant or licencee, violation of provisions of the Act or a condition of the licence, or failure to exercise "due diligence" in fulfilling the terms and conditions of the licence or in complying with the Act.

5. Broad powers are granted to the Registrar to inspect facilities, demand records, take samples, and carry out tests of a licencee's aquaculture operation.

6. The Minister may designate land under his administration and control as aquaculture land and may lease such land for aquaculture for a period not to exceed ten years.

   Comment: Such a provision would be difficult to enact in B.C. without binding the Minister of Crown Lands; the reason for this is that the B.C. counterpart of New Brunswick's Minister of Fisheries and Aquaculture, identified here as the Minister of Agriculture and Fisheries, has no direct control over the disposition of land tenures. While the Minister in B.C. may designate certain aquatic lands as suitable or unsuitable for aquaculture, the process by which a lease is acquired remains in B.C. within the jurisdiction of the Ministry of Crown Lands. The maximum lease period in B.C. at present is 30 years.

7. A decision of the Registrar may be appealed to the Minister, whose decision is final "except on the grounds of an excess of jurisdiction or a denial of natural justice". (Emphasis added.)

   Comment: From an administrative law viewpoint this is an interesting provision, as one might argue that the Minister would inevitably be biased in favour of the Registrar's decision; bias is one ground upon which it may be asserted that natural justice in an appeal process has been denied. This concern may be alleviated in large measure through a progressive refinement of the appeal process by regulation. The power to establish regulations governing all aspects of the appeal process is specifically provided for in the Act.

8. The power of the Registrar to enforce compliance with key requirements of the Act (acquisition and display of licence, cultivation of specifically authorized plant or animal species, maintenance of records, provision of information, etc.) is bolstered through the penal sanctions of the New Brunswick Summary Convictions Act.

9. The Minister may, but is not required, to undertake public consultation and establish advisory committees with respect to aquaculture.

10. The Act provides for the establishment of regulations in no less than 38 separate situations, ranging from fees to genetic standards for "aquacultural produce". This appears to be a recognition of the fact that more knowledge and experience is required to properly regulate this new industry, and that the flexibility offered by regulations will be the key to progressive adaptation of the requirements set by government.

D. Sweden[11]

Applications for authorization to conduct an aquaculture operation in Sweden are, in general, considered by two authorities:

(a) County Administration, in accordance with the Environmental Protection Act, and

(b) The Swedish National Board of Fisheries (with application made to the Regional Fisheries Office), in accordance with the provisions of the Fisheries Act.

The principal referrals conducted directly by the Regional Fishery Office are to the agency for occupational fishing, and the agency for recreational fishing. It is apparent that the interests of both traditional fisherman and recreational anglers are accounted for in this referral process. In addition, one of the final referrals obtained is from the State Veterinary Institute. The principal mandate of the Swedish State Veterinary Institute is to prevent the spread of serious contagious fish diseases to the Swedish wild fish industry, and between individual fish farm sites.

The system undertaken by county administration in accordance with the provisions of the Environmental Protection Act is in broad form analogous to the referral system as it presently exists in British Columbia. The first referrals are to local government, the Coast Guard, and the shipping and navigation authority. The interests of the Coast Guard and shipping and navigation authority are, presumably, closely aligned and would be concerned primarily with the preservation of safe navigable waterways. As the attached diagram (Appendix 4) illustrates, there are additional referrals which deal with environmental impact (nature conservation and environmental protection), site development (physical planning and building), surveying, regional economics, defense, and legal matters. The last three categories are perhaps unique to the Swedish situation. The Department of Regional Economics would provide information with reference to the appropriate siting of aquaculture facilities in order to maximize, and equalize, development along the coast of the country. The development and population of the coast is relevant to another unique referral category, defence. It is apparently the view of the Swedish government that a populated coastline which enjoys a degree of economic stability serves the interest of national security.

Lastly, a referral which deals with "legal matters" would ostensibly concern itself with the resolution of conflicts having to do with title or tenure to upland or aquatic lands needed for, or impacted by, a proposed aquaculture facility. These referrals are also provided for the Swedish National Board of Fisheries in its decision-making process.

Where there is "a risk that proposed aquaculture will transgress public or private rights", one of six Water Rights Courts in Sweden will conduct consultation with various administrative authorities including local, county administration, the Crown Land Judiciary Board, the Swedish National Board of Fisheries, the Swedish National Administration of Shipping and Navigation, the Swedish National Environmental Protection Board, and other appropriate agencies. In essence, the Water Rights Court is an administrative tribunal which carries out both administrative and quasi-judicial functions. It is an interesting model for dispute resolution or adjudication, and is preventative in that certain rights need not be transgressed before the jurisdiction of the Water Rights Court is invoked; a risk of transgression apparently is all that is required. Its efficacy may also be a product of Sweden's unitary system of government, in which the Canadian challenge of federal-provincial separation of powers is not an issue.

Appeals against decisions of the National Board of Fisheries, as well as county administrative boards, can be presented to the Swedish government. The precise details of the appeal procedure and the appellant body have not been researched by this office.

E. Norway

FISH FARMING, AND THE REGULATION OF THE INDUSTRY[12]

i) The Statutory Environment

The following comments relate to the provisions of Act No. 68 relating to the breeding of fish, shell fish, etc.

Section 1 sets out the purpose and rationale of the Act, which is economic in its orientation: "The Act is to contribute towards the balanced development of the fish breeding industry and to help it become a profitable and viable regional industry." The word regional is noteworthy because the allocation of licenses, dealt with later in the Act, is based in part upon regional considerations. The desire of the Norwegian government is apparently to promote a well-dispersed economic base for the development of coastal communities. This would maximize employment benefits, minimize localized environmental impact, and, as in Sweden, serve the security interests of the country through maintenance of a coastline with relatively equal population distribution.

Section 2 defines the scope of the Act; it is quite broad, encompassing the feeding and handling of fish and shellfish with a view to consumption, feed production, reproduction, release, research or education. Section 3 sets out the basic requirements: such activities are only to be done through benefit of a licence with specific restrictions as stated by the licence which would include the size of the operation, the species of fish or shell fish, and by certain ownership conditions. It is apparent by Section 6 that the government desires that the majority interest in the facility be held by several individuals or a juristic person [Company] with a local connection. This is consistent with the administrative requirements of the Land Act in British Columbia; it would not prevent offshore ownership but would require the creation of a legal entity on a local basis for the administration of the enterprise.

Section 5 sets out the "absolute conditions" for the granting of a licence, and these are divided into three categories:

(a) Possibility of disease outbreak among neighbouring fish or shell fish;

(b) pollution risk;

(c) "unfortunate location" in relation to the "surrounding environment, lawful traffic or other exploitation of the area."

There are a number of noteworthy miscellaneous provisions in the Act. Among these is the right to re-catch fish which were formerly penned in but escape "in a free state in the vicinity of the facility." This right to re-catch may be exercised up to fourteen days after escape and may be effected with the assistance of equipment fastened on land.

The obligation to provide information is spelled out and is imposed on anyone who has or who applies for a licence: all information is to be provided as necessary to allow authorities to be able to perform their duties under the Act. The authorities have full access to the facilities at the place to which the Act applies, and have full investigative authority.

Section 11 allows authorities to withdraw a licence in the event that the aquaculture facility "causes or involves risk of causing substantial damage of the nature" (environmental impact).

In an attached commentary to the Act a number of observations are worth noting. First, the "absolute conditions" under which a licence is issued also put the onus on the facility to comply with provisions of the Fish Diseases Act, the Pollution Act, and the Harbours Act. The expression "distinctly unfortunate localization" is also identified as meaning not only harbour and navigational considerations administered by the National Coastal Administration, but reflects a process by which "due consideration shall also be shown to other established activity. In this connection, the term "established activity" may also include "fishing and gathering of seaweed." Environmental emphasis and "outdoor life" (presumably recreational, or tourism) must not suffer.

A recent amendment to the Act allows the government to make exceptions to statutory requirements in "extraordinary circumstances", and allows for the moving and temporary relocation of facilities.

The regional nature of the industry is emphasized in the commentary, and it is made evident that the granting of licences annually is performed by the Ministry of Fisheries to "help to ensure a reasonable geographical distribution of the facilities throughout the country." Presumably, each coastal community is reasonably well served by an established road network. An absence of a road network serving the north coast of British Columbia would indicate that the wholesale importation of such a regional development concept would not be feasible, except through some form of incentive by which water or air transporation facilities could be established at reasonable cost.

ii) Administrative Issues Related to Licencing in Norway

It is noted that "the decision making process connected with each round of issues of licences is extremely cumbersome and takes a long time." The fact that licences are issued periodically in "rounds" (to allow for assessment of industry and community development as at a given date, and control numbers and dispersion of fish farms) reflects the Norwegian government's approach to aquaculture as an economic and social matter of national importance. Efforts are currently being undertaken to increase the effectiveness and rationality of the licence issuing procedure; in conjunction with this will be amendments to the Fish Breeding Act, with greater compliance being the chief goal.

The Norwegian Ministry of Environment has advised this office that, as at November of 1988, the government is preparing for the issuance of an "extraordinary round" of licences in the two northernmost counties in Norway, and special enabling regulations are being drafted with the purpose of encouraging economic activity and employment in that part of the country. In addition, regulations have been passed to streamline the licence issuing process and provide a greater role for the counties.

iii) Resource Use Conflicts, and Resource Planning in Norway, With Observations on the B.C. Experience

In Norway, the Planning and Building Act is seen as a potential avenue to resolve user conflicts "since the municipality is given the authority to reserve specific areas for different purposes, including aquaculture." However, recent experience has shown that this Act does not allow for extensive planning in the coastal zone. This office has been advised that there is now a proposal before the Norwegian Parliament suggesting an expansion of jurisdiction of the Act to provide for this type of planning.

Comment: This is analogous to the situation which currently exists in British Columbia although with less tightly defined legislative authority. In B.C., municipalities and regional districts have the right to zone the foreshore, including the water surface within their boundaries, for particular activities. While the province has the authority to override the expressed desires of local government and issue a licence, the licence is always issued subject to the requirements imposed by local governments. It is worth noting that the provincial ministries associated with aquaculture administration, particularly the Ministry of Crown Lands, respect the established desires of local governments expressed either through zoning or through the creation of an adopted official community plan, established pursuant to the provisions of Sections 944 to 949 of the Municipal Act. The problem which has existed and continues to challenge local governments is that issuance of licences may well occur within a time frame such that the regional district, Islands Trust, or municipality cannot produce an organized response. For the local government, such challenges require planning and foresight, and most often must be undertaken independent of any provincial initiative. By the time a licence is issued and an aquaculture netpen facility is floated into place, the creation of an official community plan or the designation through zoning of a specific area as not suited for aquaculture, is, with respect to that facility, of no practical effect. The commercial aquaculture facility is entitled by law to enjoy the use of its tenure, and to obtain such renewals of tenure as it is able, as a "non-conforming use" (Section 970, Municipal Act). In this respect, zoning and planning are effective only to control future development and can do little to affect development which has occurred previously.

Some communities in British Columbia have initiated or are participating in planning exercises aimed at effective and rational control of aquaculture siting and development. For example, residents of Cortes Island have developed a comprehensive set of policies dealing with coastal protection, economic development, public access, private property interests, and public participation in consideration and approval of applications for aquatic land tenures. These policies were submitted, pursuant to Section 951 of the Municipal Act to the Board of the Comox-Strathcona Regional District for consideration earlier this year. The process is ongoing at the time of publication of this Report.

Another example is the Sechelt Inlet Coastal Strategy Pilot Project, which the Foreshore Advisory Task Force of the Sunshine Coast Regional District has commissioned in order to obtain documented information on land status, land use, and land user and agency patterns of use and interest. This information will in turn lay a foundation for disciplined land use planning within the limits of the Regional District's jurisdiction. Financial support is being provided by a planning grant from the Ministry of Municipal Affairs.

At present there is a project in Norway which is loosely analogous to the coastal zone management schemes which have been developed in Washington and Alaska. The project is known as LENKA, a cooperative effort of the Ministry of Fisheries and the Ministry of Environment. LENKA is the acronym for the title: Nation-Wide Analysis of the Suitability of the Norwegian Coast for Aquaculture. LENKA has as its goal the provision of practical assistance to municipalities in the "planning of the coastal zone and water courses." This would include the development of a body of professional knowledge and advice for aquaculture planning and development in a way that recognizes the inter-relationship of environment, industry, conservation, and other interests such as recreation and public enjoyment. LENKA's first report is scheduled to be introduced in 1989.

It should be noted that the approach utilized in LENKA is not unknown to resource Ministries in British Columbia: Westwater Research Centre at U.B.C. provided a series of reports to the Marine Resources Branch (predecessor to the Aquaculture and Commercial Fisheries Branch of the Ministry of Agriculture and Fisheries) in 1982 and 1983. Resource conflicts in coastal land allocation were foreseen, and mechanisms to plan for conflict avoidance were proposed.

The Norwegian government recognizes that the effective resolution of coastal zone conflicts cannot be achieved in its entirety through "ordinary planning of the use of sea areas", and legislative amendments are being considered to cope effectively with the situation. It is the opinion of this office that a program of rational legislation produced with the assistance of maximum participation from all interested sources reflects an optimum means of achieving fair regulation in a complex area of inter-dependent interests. Regulation through administrative policy alone is inappropriate in that superior interests can be recognized on an ad hoc basis, and the system itself can become the subject of much suspicion, resentment, and litigation.

F. Washington State

Broadly speaking, governance of the coastal areas of Washington State is carried out under two Acts: the Shoreline Management Act of 1971 (SMA), and the rules of the State Environmental Policy Act (SEPA). These two Acts operate in coordination with Federal legislation, the Coastal Zone Management Act of 1972 (CZMA).

The SMA of 1971 in its opening paragraph sets out clearly the State policy and use preference for shorelines of the State. The SMA provides substantive guidelines for the development of master programs by local governments. These programs are created by local government, with public hearings, in accordance with the criteria set out at the beginning of the SMA, regarding State policy and use preference. The master program is submitted for approval to the Washington State Department of Ecology which then reviews and may approve it in cooperation with the Federal Secretary of Commerce, who administers the grant program under the CZMA. The CZMA states that the Secretary of Commerce "may make grants to any coastal State for the purpose of administering that State's management program...[if]...the State has developed and adopted a management program for its coastal zone in accordance with rules and regulations promulgated by the Secretary, after notice, and with the opportunity of full participation by relevant Federal agencies, State agencies, local governments, regional organizations, port authorities, and other interested parties, public and private, which is adequate to carry out the purposes of this [legislation]." The Secretary may also make grants for the development of management programs, and for resource management improvement.

Once the master program is approved, the effective power shifts to the local government, in order that it may issue development permits and retain control over administration of its master program. Thus, permit decisions are made at the local level. Both the SMA and the SEPA process provide opportunity for public input in the decision making process. Appeals can be made by any interested party, such as local government, a State agency, or a concerned citizen, after the local government makes a permit decision. The State government has veto power over a development proposal only in cases where it strongly disagrees with a development application which falls within the "Conditional Use or Variance" classification under State law. Approximately one-third of development permits come within this heading.

In addition, about 4% of the "substantial development permits" (the most commonly issued type of permit for shoreline development) granted by local governments are appealed to the Shoreline Hearings Board by the State. Opposition to aquaculture proposals in Washington has been most effective at the local level, where most permits are issued. Obviously, elected officials ignore public opposition at their peril. Some local governments have taken the step of calling moratoriums on net-pen development.

The system employs several elements fundamental to administrative fairness:

(a) a clearly defined legislative base;

(b) detailed structure for the exercise of discretion and maximization of public participation (through Shoreline Management Act guidelines for development of master programs, and legislated criteria for issuance of development permits on the shorelines of the State); and

(c) an independent and binding appeal process, exercised through the Shorelines Hearing Board; in addition, a further appeal on the merits to the Court is available for any decision of the Board.

However, information received by this office suggests that all is not perfect with shoreline management in Washington, and the aquaculture industry in Washington is in a relatively embryonic state as a result. It has been suggested that some of the procedural hurdles built into the Shoreline Management Act, such as the authority of the Shorelines Hearing Board to order the production of an environmental impact statement, can be used effectively to block an aquaculture development proposal. Not only are environmental impact statements expensive for private corporations to procure, there remains the risk at the end of the day that their proposal will still be defeated. In the opinion of this office, if procedural hurdles can be used effectively to prevent an application from being heard on its merits without incurring prohibitive expense, then this may in itself constitute administrative unfairness. The Department of Ecology in Washington is attempting to overcome this type of potential insitutional barrier to development through the creation of a "programmatic environmental impact statement" (E.I.S.), which will streamline the impact prediction process through recognition of critical environmental variables, which can then be applied to standardized formulas for analysis. This office has been advised by officials in Washington State that the programmatic E.I.S. may reduce in scope, or eliminate entirely, the site-specific E.I.S. in cases where the basic site characteristics fall within the parameters of the programmatic model. It is anticipated that the programmatic E.I.S. will be officially adopted in the spring of 1989. (Similar criteria exist and are applied by Ministry personnel in B.C. on a lesser scale for determination of basic "biophysical suitability" of sites.)

A potential deficiency of the Washington regulatory model is the resolution of conflicts through a system which is in essence adversarial. The "litigation model" has so far been employed as the primary mechanism for conflict resolution in many American regulatory systems; only recently have the functional inadequacies of such a system been addressed. A significant and successful application of an alternate dispute resolution process is Washington's Timber, Fish, Wildlife Agreement, which was the culmination of an intense multi-party series of negotiations leading to the reconciliation of the interests of Native people, the forest industry, wildlife conservationists, and environmentalists, without resort to the courts. This process and the structure which underlies it is discussed later in Appendix 13. With respect to aquaculture, it would appear that the Washington coastal management system has so far been unsuccessful in reconciling competing interests. This in turn has given rise to certain initiatives, most notably reflected in an announcement from the office of the Governor, September 28, 1987:

> "A State policy designed to promote the growing aquaculture industry in Washington while maintaining environmental safeguards was released today by Governor Booth Gardner. Gardner also announced that the State will hold an aquaculture conference in early 1988 to help "put all the issues on the table" and resolve controversies surrounding aquaculture development. "There has been some misinformation coming from a few people opposed to aquaculture development," Gardner

> said. "It's time to get proponents and opponents together, separate fact from fiction and decide what the real issues are. Then we can move forward and manage the growth of this industry wisely with understanding and cooperation."

A senior official in the Washington Department of Ecology has informed this office that, to date, the initiative of the Governor's Office has not succeeded. Apparently the support of citizens and citizen's groups necessary for a consensual agreement to be formed was not forthcoming, as they perceived a bargained agreement to be inconsistent with their best interest. The system as it exists serves their needs more effectively. This makes an interesting contrast with aquaculture development in B.C. as it is perceived by some individuals, their view being that average citizens are powerless to halt an industry which enjoys government support.

Coastal aesthetics have proven to be an area of considerable concern in Washington. Coastal residents have made known their opposition to aquaculture installations which would visually alter in a significant way the character or ambience of the coastline. In an attempt to provide objective criteria to assess an otherwise subjective impact, the Department of Ecology in the State commissioned an "aquaculture siting study". The study utilized rather innovative methodology to predict visual impact and mitigate effects. There were four components to the visual impact analysis:

(a) Computer simulations to demonstrate how different size facilities appear under a range of offshore distances and viewing heights;

(b) photo simulations to portray accurately what a completed installation would look like;

(c) visual impact assessment utilizing the main visual impact variables of landscape, viewer and facility (also included are two categories of mitigation measures, being alternate site selection, and facility layout and design); and,

(d) a visual assessment workbook with an inventory component for rating the scenic quality of the site, number of viewers, and the visibility of the facility for resulting levels of potential visual impact is presented.

A cumulative impact analysis is also presented which incorporates not only the visual factor but biological, navigational, and access matters, for determining whether a threshold level suggesting alternative site selection has been reached. Some excerpts from the Aquaculture Siting Study and the visual impact analysis inventory and evaluation rating sheets are referred to in Appendix 5.

Selected excerpts from Washington State and federal coastal management statutes are included in Appendix 6.

G. Alaska

The Alaska Coastal Management Act consists of two separate statutory bases; Alaska statute 44.19 provides for the creation of an Alaska Coastal Policy Council and for the authority of the State Office of Management and Budget to render, on behalf of the State, consistency determinations and certifications authorized by the Federal Coastal Zone Management Act of 1972. Alaska statute 46.40 provides for the development of the Alaska Coastal Management Program, and, in a manner similar to the State policy enunciated in Washington's Shoreline Management Act, sets out the objectives of the coastal management program. This Act also gives authority to the Alaska Coastal Policy Council to identify and demarcate coastal resource districts, each of which is responsible for submitting an approvable district coastal management program which is consistent with the objectives outlined in the Act (s. 46.40.020).

Once the district coastal management program has been approved and is in place, the municipalities and state agencies are then obligated to administer land and water use regulations or controls in conformity with the program. An appeal to the council exists by which any district, citizen of the district, or state agency, may seek to enforce compliance with the provisions of the district coastal management program.

The Act also provides for the creation of coastal resource service areas, which are essentially vehicles for the provision of coastal management in sparsely populated areas; this is for the ultimate purpose of ensuring that no area of the coast is excluded from the benefits or protection conferred by the coastal management program.

The Alaska Coastal Management Program represents a model worthy of close scrutiny providing as it does a framework for local and public participation in State decisions, and a mechanism for the resolution of conflicts between government agencies, individuals, and local communities.

At the present time, salmon farming in net-pen facilities by private interests is not permitted in Alaska. The Alaskan State legislature passed a Bill (Chapter 145 SLA 88) which extended the existing finfish mariculture moratorium until mid-1990. However, the bill also legalized "sea vegetable farming" and established a regulatory scheme for this activity. It also established the "Alaska Finfish Farming Task Force".

Considerable controversy over proposals to allow such development continues. The State Legislature is considering the issue and the laws which would be introduced to govern the industry. Opposition to salmon farming in Alaska appears to have come primarily from the established wild salmon fishing industry, which is itself a major contributor to the State economy, and whose participants constitute a significant block of voters.

It is interesting to note that government agencies, academics, and lobbyists on both sides of the continuing debate in Alaska are studying B.C.'s experience with net-pen aquaculture very closely.

This office has reviewed with interest the final report of the "Etolin Island Area Mariculture Pilot Project". This report includes a comprehensive review of the biological and environmental issues associated with the aquatic farming of shellfish and marine plants. Excerpts from Chapter 3 of the report dealing with "Conflicts with other coastal users" and "Guidelines and Mitigating Measures", are attached for reference in Appendix 7.

Selected excerpts from Alaska State statutes are also included in Appendix 7.

H. Oregon

The Oregon State government describes its coastal management program in an explanatory text entitled "Oregon Coastal Management Program". The program summary which begins the text is reproduced in its entirety in Appendix 8 to this paper. Some additional excerpts from the text are useful in providing an overview of the system and the way in which it has been structured:

> "The Oregon Coastal Management Program (OCMP) balances the needs for long-term growth, development, and protection of the State's coastal resources. Relying on a partnership among the public, local governments, and state

and federal agencies, the OCMP is based on separate but coordinated sets of planning and regulatory authorities:

- State wide planning goals adopted by the Land Conservation and Development Commission (LCDC);
- acknowledged comprehensive plans which local governments have developed and LCDC has approved; and,
- specified statutory authorities of various state agencies.

Together, these authorities establish policies and procedures for planning and managing the balanced preservation, conservation, use, development and restoration of the natural resources in Oregon's coastal zone.

These authorities are tied together by two requirements in Oregon's Land Use Planning Act and the State wide planning goals. First, the Act requires all units of government to coordinate their actions affecting land use with affected citizens and with local, state, and federal agencies. Second, the Act requires that the plans and actions of all agencies and local governments must comply with the State-wide planning goals and acknowledgement master plans."

Oregon's Coastal Management Program took shape early in the 1960s as economic, environmental and institutional concerns came to light:

> "Accelerated growth on the coast was damaging fragile ecosystems; it also was aesthetically displeasing. Problems included the filling of estuaries, strip developments along coastal highways, draining of wetlands for development, and unplanned commercial and residential developments. In addition to private development, several state agencies were proposing or constructing projects which would significantly affect the natural environment of the coast."

The Oregon Coastal Conservation and Development Commission (OCCDC) was created in 1971 by the Oregon State Legislature to study these problems and propose solutions. It is interesting to note that the economic and environmental problems which OCCDC identified as facing the Oregon coast bear close similarities to the challenges which British Columbia now faces:

> "The economy of the Oregon coast is characterized by over-specialization, persistent unemployment, low per capita income and a narrow tax base. These economic limitations are compounded by the highly seasonal nature of local employment and economic acitivies dominated by forestry, fishing, and tourism."

The Commission concluded that the problem was primarily one of inadequate management mechanisms. Again, there is a striking parallel with the situation as it currently exists in British Columbia. While there is no shortage among Provincial Ministries of either expertise, good intention, energy, or dedication, there are nonetheless significant administrative inadequacies which work to perpetuate the possibility of administrative unfairness through failure to reconcile, or put in place a management mechanism for the reconciliation of legitimate competing interests. For example:

> OCCDC also found that a solution to these economic and environmental problems had generally been hampered by the fact that the governmental jurisdictions managing the coast did not adequately or effectively coordinate their activities. Limited financial resources and the need for effective citizen participation at all levels of government also required a cooperative and state-coordinated program to achieve wise use of coastal land and water resources.

By assignment from the Oregon State Legislature in 1975, LCDC acquired the task of completing development of the Coastal Management Program which had been initiated by OCCDC. Ultimately, four objectives were distilled for the Coastal Management Program:

1. Create and maintain a balance between conservation and development, and between conflicting public and private interests, that will assure the greatest benefits for this and succeeding generations of Oregonians;

2. Guide public and private uses of natural resources of the coastal zone to avoid irreversible damage;
3. Protect the unique character of life on the coast; and
4. Manage the natural resources and uses of the coast on an evolving and flexible basis so, as experience with and knowledge of the coastal zone increases, the program can be revised accordingly.

An appeal component has been built into the management program to respond to the controversy often accompanying land use decisions. This is the Land Use Board of Appeals (LUBA), which was created in 1979 and has jurisdiction over virtually all land use decisions; it has the authority to uphold, reverse, or remand (send back to authorities for reconsideration) a land use decision.

It is important to note that local governments are a pivotal component of Oregon's Land Use Program. Cities and counties are authorized by statute to adopt and implement comprehensive plans and zoning ordinances and to regulate land use within their jurisdiction; this authority is supplemented by State law which requires cities and counties to adopt or amend their comprehensive plans and implementing ordinances to comply with the State-wide planning goals.

These plans are the primary mechanism for establishing long-term, site-specific land use policies and decisions. They are also central to providing effective coordination among all levels of government. Once comprehensive plans are acknowledged, all land use decisions must be consistent with the plans.

As is the case in Washington, the Oregon Coastal Management Program mechanism for dispute resolution appears to be based on a litigation model rather than a consensual approach.

The OCMP explanatory text states, "An important hallmark of Oregon's Land Use Planning Program is its requirement that land use decisions include findings explaining how applicable ordinance standards have been complied with." This is an expression of the long established administrative law doctrine that, where quasi-judicial decisions are being made, reasons in support of the decision should be given. The Oregon Supreme Court, in the case of Green vs. Hayward (1976) stated that "findings" to support land use decisions were necessary for the following reasons:

(a) To facilitate judicial review;

(b) To ensure more careful administrative consideration;

(c) To help parties plan their cases for re-hearings and judicial review; and,

(d) to keep agencies within their jurisdictions.

The Office of the Ombudsman is of the view that such a system is well-suited for the determination and declaration of legal rights or liabilities after a controversy has arisen. However, if various competing yet interdependent interests have not been reconciled in the planning process, it is doubtful that an adversarial appeal process would achieve such resolutions in many cases. A consensual approach in the first instance to the resolution of potential disputes involving the public interest would likely be more appropriate; this is discussed in detail later in Part VI of this report.

As a last note, Oregon has been included for study primarily due to its innovative coastal management systems. Net-pen facilities in Oregon are almost non-existent, due to the lack of sheltered, deep-water sites close to the shoreline. With its various estuaries, however, Oregon is well-suited for ocean ranching (defined earlier in this report) and has chosen to pursue this option for enhancement of fish production.

I. Hawaii

Hawaii is unique in having been the first State to carry out comprehensive resource planning and development for aquaculture. Pursuant to this, a natural resources assessment provided detailed data on potentially suitable sites, and a parallel study was conducted on aspects ancillary to successful industry development: technical resources, legal requirements, financing, marketing, and the like. These were ultimately, through experience, integrated into what authors Corbin and Young refer to as an "holistic conceptual approach, the Aquaculture Development Niche".

It is important to note that at present all aquaculture in Hawaii is land-based, and involves both fresh and saltwater facilities. The concept of ocean leasing, as the authors point out, poses a formidable challenge. Conflicts parallel those which have occurred in British Columbia, as shown by the following excerpt from the authors' paper presented at the Aquaculture International Conference in Vancouver (September, 1988):

> "The process of establishing a new regulatory program for leasing of ocean space around the Islands illustrates another set of regulatory coflicts. Ocean leasing is a familiar concept, which allows ownership of ocean space for commercial use, such as mariculture. Examples of leasing abound worldwide; Hawaii is a latecomer to this area. Island interest began with a 1981 report which recommended the state consider ocean leasing for mariculture and other uses. A limited Ocean Leasing Act was promulgated in 1986, amid much controversy. The first test case, a tourist submarine company, was withdrawn.
>
> Conflicts observed during the debate of the law and the recent test, stem from several fundamental issues:
>
> - Private developers want long-term site tenure to justify the capital investment.
> - Local interests do not want granting of exclusiveness to what has been traditionally a common property resource and cite aesthetic and environmental concerns.
> - Ocean users, e.g. boaters, fishermen, divers, swimmers, and businesses fear interference and cite public safety concerns.
>
> Resolution of these questions will await a future, probably non-mariculture test case. Fundamental problems to be addressed include lack of baseline environmental data, translation of complex environmental ideas to understandable language and strong emotionalism that prevails in these discussions. However, as with the discharge issue, the degree of difficulty in leasing will be very much dependent on the site chosen."

J. COMMENTARY: THE U.S. EXPERIENCE

Shore resource consultant Wolfe Bauer in a paper entitled, "The Geohydraulic system as a basis for shore management", presented to the shore management symposium in Victoria, 1978, made a number of useful observations based on his experiences in Oregon and Washington. A summary of his main points follows:

1. The Oregon legislature, in Bauer's view, properly put "the horse before the cart" in educating itself about coastal resources and priorities and preferences for resource use to control pollution and protect the environmental characteristics of the shore zone prior to creating management legislation and policy.

2. Oregon then conducted an extensive inventory of its coastline to determine the nature and extent of the resources there, to determine the types of physical ["geohydraulic"] processes at work shaping and influencing the shore area, and to classify the various areas of the "shore-process corridor" for management purposes.

3. Washington, in Bauer's opinion put "the cart before the horse" in designing legislation which divided shore areas into four categories (natural, conservancy, rural, and urban), "depending upon the degree of man's intrusion." Bauer's criticism of this approach is that it bears little relation to the natural processes at work in the areas being classified, and the boundaries between zones cannot be so neatly classified.

4. A common deficiency for both Oregon and Washington was noted:

> While it was certainly more logical to first examine and define the shore resources as in the Oregon approach, delegation of this task to various unrelated agencies and consultants without insisting on a coordinating language or text proved to be a major weakness in consolidating all this information into a unified and practical management tool. In a similar way, the inability of the designated Washington State agency to provide over 50 local governments

and the citizen committees with a uniform technical language and education background to their riverine and marine shore systems resulted in a mish mash of inventories and classifications that was often more confusing than the Oregon inventory product.

5. In like manner, the systems in Oregon and Washington exhibited common strengths: "...it should be realized that the very act of providing a citizen-involved shore inventory program represents a new and promising direction of resource management in a democratic society. ...such legislation signifies a step in the right direction for, in broad terms, it recognizes the functional, recreational, economic, and aesthetic values of a shrinking resource heritage and addresses itself to the enhancement, preservation, conservation, and more informed and efficient use of all shore-related environments."

In the event that Mr. Bauer's comments with respect to Washington State sound too disparaging, Professor Robert L. Bish of the University of Victoria School of Public Adminstration notes in his book, "Governing Puget Sound", that by 1980 every local government except one on Puget Sound was operating a system under a state-approved master program. He went on to write (in 1982):

> It is too soon and very difficult to evaluate the impact of the SMA on shorelines, but some decisions are notable. San Juan County has used its permit authority to reject proposals for recreational facilities on state owned land by both the Department of Natural Resources and the State Parks and Recreation Commission. In contrast, the City of Seattle has used its authority to encourage more public access to shorelines as a condition of permit issuance. It also appears that non-water dependent uses have been virtually eliminated.

This office does not advocate the wholesale importation of American coastal management structures for application within the B.C. context. Rather, as pointed out in each of the foregoing sections analyzing systems in Washington, Alaska, and Oregon, there are elements useful for analysis and possible incorporation to a model for integrated management of the coastal zone in British Columbia. Optimum fairness in the reconciliation of diverse interests, all competing for a share of a finite resource, demands that a framework for public participation and goal-creation be established; that a legislative base be provided for the coastal management activities of both local and provincial authorities; and that mechanisms for appeal of adverse administrative decisions be put in place and made available to all affected parties - from small landowners to provincial Ministries.

PART V

A. INTEGRATED RESOURCE MANAGEMENT: INFORMATION EXCHANGE, PLANNING, AND ADMINISTRATIVE FAIRNESS

B. SOME BRITISH COLUMBIA EXPERIENCES:

  1. GOVERNMENT RESEARCH AND RECOMMENDATIONS
  2. CROWN LAND PLANS
  3. THE FRASER RIVER ESTUARY STUDY

C. INTEGRATED RESOURCE MANAGEMENT AND PLANNING: SUMMARY

A. INTEGRATED RESOURCE MANAGEMENT: INFORMATION EXCHANGE, PLANNING, AND ADMINISTRATIVE FAIRNESS

1. Aquaculture as a case study

It has been pointed out to this office by some individuals that there is little conceptual difference, insofar as land use planning and competition are concerned, between fish farming and many other coastal activities such as log storage, log booming, marinas, and pulpmill development. To the extent that aquatic land is occupied by a private party for an exclusive purpose, this is true. It is important to keep this fact in mind when reviewing the observations and recommendations of this office relating to planning and management of activities in the coastal zone.

The rapid development of the aquaculture industry over the last several years, and the anticipated continued growth of the industry fuelled by successful harvests and technological refinement, have provided to this office a useful case study in land and resource allocation. The conflicts which have arisen have in large measure been addressed through evolutionary changes in ministry policy; nonetheless, there are no guarantees that such conflicts will not arise again when economic demands for land and resources accelerate suddenly in a given geographic area. Anticipation and accommodation - more appropriately, reconciliation - of conflicting interests requires foresight, and foresight does not necessarily require the talents of a visionary; rather, it is the practical consequence of a disciplined and coordinated planning process which seeks out and explicitly recognizes the legitimate interests of all parties who may be affected by development - or, in some cases, a lack of development.

As set out in Part II (h) of this report, there is a fundamental relationship between planning and administrative fairness. This section will provide some discussion and examples of this principle in practice.

2. The primacy of planning

The fundamentals of planning are well understood within British Columbia's land allocation and administrative bureaucracy. Likewise, the province's universities and other educational institutions offer a well-spring of knowledge and original research in land use planning as a cornerstone of the concept of integrated resource management. American systems of coastal resource management have been studied by both provincial ministries and educational institutions for at least the past ten years. Ministries with either major or peripheral involvement in aquaculture administration all recognize the importance of management tools which allow the left hand to know what the right hand is doing. This realization is reflected in the existence of what is known as the Aquaculture Steering Committee (ASC), formed in May, 1985.

The ASC, under leadership of the Deputy Minister of Agriculture and Fisheries, meets periodically to review and assess matters of concern related to aquaculture regulation and administration. These concerns span the entire spectrum of issues associated with the subject, ranging from municipal concerns to research projects aimed at helping the aquaculture industry combat fish disease. ASC exists because executive members of each of the Ministries involved realize the basic necessity to have, at the very least, periodic "round-table" discussions to exchange new information, decide Ministry priorities, coordinate programs, and attempt to work out resolutions to problems that cross jurisdictional boundaries.

The ASC is excellent in concept but faces a number of practical realities which limit its potential usefulness. These include:

(a) There is no overriding legislation, regulation, or published policy which establishes goals, objectives or processes which the ASC must corporately pursue; rather, the ministries represented on the ASC continue to pursue individual legislated or policy mandates, and their representatives must, by reason of their positions, bring Ministry policy to the table.

(c) A corollary of the above is that the ASC is dependent upon the goodwill and common sense of its members in order to achieve any degree of functional effectiveness. While the exposure of this office to the workings of the ASC indicate that these qualities are demonstrated in the ASC's deliberations, the process by which it operates and the jurisdictional division inherent in its composition do not ensure that the results of its work will serve the public interest in optimum fashion over the long run.

What remains obvious is that while each Ministry recognizes the importance of cooperative planning, and utilizes principles of "strategic planning" in the design and management of its own operations, integrated inter-ministerial planning does not exist under a broad legislative mandate.

3. Recognition of the primacy of planning: a review of the proposed Planning Act (1980)

In September of 1980, the Ministry of Municipal Affairs released a discussion paper containing the proposed Planning Act. The discussion paper begins with a detailed description of the need for planning and the mechanisms incorporated in the proposed Act designed to address this need. The principles enunciated reflect a solid understanding of the relationship between planning and administrative fairness, and are worthy of study. The proposed Planning Act failed to receive Cabinet approval and was never passed into law by the Provincial Legislature.

Some elements which are worth extracting from the discussion which preceded the text of the proposed Act follow. It should be noted for clarity that these principles and observations were extracted from the Ministry's commentary, and do not reflect an attempt by this office to analyze the text of the proposed Act itself. Observations and principles worth noting include:

(a) Finite land resources and infinite land uses and requirements dictate the need for careful land use planning.

(b) Planning necessarily demands regulation of activities, the most valuable activities being "evaluated on a scale of province-wide objectives and priorities."

(c) Several statutes regulate land use, and compliance with their requirements may significantly increase the time, cost, and uncertainty associated with development.

(d) A developer or other applicant or local resident deserves to know:

   i) the reason for regulation and the process which must be followed;
   ii) how long final approval will take;

iii) how many referrals are needed;

iv) who will consider the application at each stage of approval;

v) criteria for acceptance or rejection, and the values used to make a decision.

(e) An efficient, inexpensive, and independent appeal system is necessary to correct instances of unequal treatment or incorrect decisions.

(f) "Every citizen should be able to get an answer to the question of why the provincial government should be involved in any land use decision it regulates."

(g) Local government should outline areas of its own need and concern, now and for the future, in land use plans which allow public participation in building a framework for regulation, and which enhance predictability of regulatory action and assessment of government performance.

(h) Three administrative features of the proposed Planning Act which it purported to promote, and which would be endorsed in principle by this office include:

i) A cohesive system of planning that is accessible and accountable at all levels of government, and,

ii) the coordination of provincial planning and land use programs to provide an integrated framework for determining the optimum use of land and resources.

iii) Approving officers in municipalities would eventually be "independent of any Ministry having a specialized interest in land use."

Some of the basic administrative principles enunciated in the proposed Planning Act are worthy of implementation in enabling legislation directed toward the establishment of integrated coastal resource management systems. It should be remembered at this point that aquaculture is and remains but one application of coastal resources.

B. INTEGRATED RESOURCE MANAGEMENT AND PLANNING: OTHER BRITISH COLUMBIA EXPERIENCES

1. Government Research and Recommendations

In May 1977, the Coastal Zone Resource Sub-Committee, reporting to the B.C. Land Resources Steering Committee, produced a comprehensive work entitled "The Management of Coastal Resources in British Columbia". Volume 1 was produced in draft form only and was entitled "State of the Art". The "State of the Art": this volume contained a summary of recommendations, some of which are paraphrased below. It should be noted that the recommendations which follow were part of an internally generated document which was not officially adopted as an expression of government policy. Nonetheless, it is the opinion of this office that the administrative principles contained within the summary of recommendations remain equally applicable today, and it remains a valuable source document for anyone seeking to develop an appropriate system for the management of coastal resources in this province. It should also be noted that the Sub-Committee members were drawn from both federal and provincial ministries and represented an assembly of diverse expert knowledge.

Excerpts from the summary of recommendations of the sub-committee are reproduced in Appendix 11. The principal components of the sub-committee's recommendations are worth reviewing:

i) A full-time inter-governmental agency mechanism should be established to perform coordinative, advisory, information, assessment, and identification functions regarding coastal management programs, strategies, and initiatives.

   A major function of the agency mechanism would be development and implementation of an integrated coastal resource management program, beginning with the preparation of a coastal resource atlas and a "biophysical" inventory program for the coastal zone. Other related functions would include improvement of inter-agency information exchange, research programs, resource use criteria, and referral systems.

Public information and interdisciplinary resource management programs at the graduate student level would be encouraged as well as programs for generation of socio-economic information which would be integrated with biophysical data.

ii) Initial focus for these initiatives would be in the Strait of Georgia region. [Note: The Committee likely reasoned that as the most populous coastal area of the Province, it would be the area of greatest environmental impact and potential resource use conflict. However, what was not foreseen at that time was the extensive development of Sechelt Inlet for aquaculture, and the controversy which has followed.]

iii) Local governments should be assisted with application guidelines for biophysical and socio-economic data, and with technical expertise for zoning and development control process, as appropriate. General policy and management guidelines should be distributed to both government and private organizations involved in development of proposed facilities in the coastal zone.

iv) Coastal resource management plans which designate the uses of land and water resources should be developed.

v) Federal-provincial initiatives aimed at acquiring lands worthy of conservation, but not protectable through existing mechanisms, should be considered.

vi) The public should have opportunities to participate in coastal resource use decisions, and "affected interests should be provided with an opportunity to participate directly in the decision-making process."

2. Crown Land Plans

In June 1980, the Skeena Region Operations Division of the Ministry of Lands, Parks and Housing, published the Graham Island Crown Land Plan. It was adopted at that date as official Ministry policy for "the planning, management and disposition of unalienated Crown lands in the Plan area."

It was a five year plan, binding upon the Ministry of Lands, Parks and Housing until July, 1985. In the Plan, the planning process, goals and objectives were all clearly laid out as well as the results of a physical inventory of the study area, including resources such as forestry, mineral and petroleum resources, agriculture, fish and wildlife, and archeological and historical sites. Present land use and resource capabilities were emphasized, and alternative development concepts (industrial, rural, or environmental) were put forth and evaluated. Finally, planned policies for each type of development or use were set out. It thus became a comprehensive information document and a reliable, predictable indicator of Crown policy for all of the lands within the study. The plan was not a paradigm of integrated coastal resource management, however, in that it dealt only with the use and disposition of Provincial Crown land. Integrated resource managment as the concept is applied in this report refers to a process in which more diverse interests, and the use of lands over which other levels of government have jurisdiction, are recognized and reconciled to produce maximum benefit and minimum detriment to all parties.

Another useful example is the Sooke Harbour and Basin Crown Foreshore Plan released in August of 1980. This plan is similar in substance to the Graham Island Crown Land Plan, and involved the establishment of goals, the inventory of all resources and land uses within the study area, and the presentation of detailed plans and policies binding upon the Ministry of Lands, Parks and Housing for a five-year period. Detailed plans for specific areas, a "permitted use matrix", and a comprehensive plan map outlining development areas, resource management areas, and deferred planning areas, were included as integral components of the document. Nonetheless, what resulted was a Plan which reflected only the best efforts of one Ministry to serve the public interest to the limit of its own mandate. In that respect it did not fit within the overall concept of integrated resource management as it is understood by this office. A quote from the "Forward" to Sooke Harbour and Basin Crown Foreshore Plan will illustrate the limitations faced by the Ministry then known as Lands, Parks and Housing:

> The pursuit by the Ministry of a planning process to facilitate improved Crown lands and foreshore allocation and management decision-making does not imply that the Ministry is attempting to usurp the planning and management

> responsibilities of other government agencies at all levels. The Ministry recognizes and supports the fact that, by virtue of various statutes, many agencies have planning and management responsibilities relative to specific resources such as, for example, forests, water, wildlife, and archeological resources. The intent of the Ministry is to encourage these agencies to further their mandates to the greatest extent possible, as they pertain to unalienated Crown land and foreshore, and in a manner which maximizes the long-term economic, social and environmental benefits to the residents of British Columbia.

The Ministry could only rely on the goodwill and dedication to public service of the other Ministries to exercise their authority in a way which it was hoped would serve the best interests of all involved. In the absence of enabling legislation creating a statutory system of priorities, planning tools, and implementation mechanisms, an encouraging word was the best that it could offer. Other comprehensive Crown land plans, most notably involving estuary management, have been produced and implemented. A full analysis of their creation and operation is beyond the scope of this paper.

3. A Mighty Effort: The Fraser River Estuary Study. (FRES)

It is difficult to convey adequately the scope of effort and coordination which ultimately resulted in a management program for the Fraser River Estuary. It began as a joint federal-provincial study in 1977 by agreement between both federal and provincial ministries of the environment. Phase 1, which was completed in 1978, resulted in a series of reports describing characteristics of present and future land use and transportation; water quality, habitat, and recreation; and an analysis of the constitutional and legislative frameworks for estuary management.

Phase 2 of FRES was initiated in 1979 and completed in March of 1982. This included technical reports with proposals and data on management systems, information systems, area designation, referral systems, legal provisions and organizational options. Phase 2 also produced a comprehensive report on the results of public involvement and public opinion. The document containing the final proposal for an integrated management plan was entitled "A Living River by the Door".

The report of the proposed management program for the Fraser River Estuary is divided into five main segments: 1) Vision, 2) Creating a management program for the estuary, 3) Estuary management policies, 4) Estuary management system, 5) Estuary programs, plans and designations.

The elements of the management program and its relationships are illustrated by the diagram in Appendix 9. It begins with issues, concerns and trends in the changing estuary which are incorporated into visions for the estuary. Visions (or long-term concepts) are then translated into policies in which a basic policy is created with goals and objectives surrounding each of the four elements of the visions. From these policies are developed an estuary management system, interlinked with estuary programs, plans and designations. In the estuary management system, a policy committee, key agency group and program committee work together with the lead agencies through three special processes: a participation process, a coordinated referrals and assessment process, and a Fraser Estuary Information System (FEIS). The estuary programs, plans and designations are divided into three main divisions: activity programs covering port terminal, navigation traffic, habitat management, waste management, recreation and parks, etc.; area designation; and management area plans for each specific designated area of the estuary.

The following summaries of user group and government agency concerns regarding management of the Fraser River Estuary, presented in "a Living River by the Door"[13], illustrate the diverse range of private, commercial, and public interests which an integrated management plan must attempt to reconcile in a manner which is consistent with maximum benefit to all. These summaries are included as they represent a multi-interest, multi-party, multi-jurisdiction situation, which provides a reasonable model of what a coastal planning team might expect to encounter:

Fraser River Estuary user group concerns -

i) "The forest industry wants to assure that the estuary is managed as part of the coast-wide log movement system. Log storage in the estuary is essential due to the need for inventories for mills, high cost of land storage, and the lack of alternate water storage sites.

ii) The marine transportation industry wants to ensure that navigation channels are capable of handling anticipated demands for goods movement. Areas for industrial development to be identified so industry can plan and maintain unrestricted water access.

iii) The fisheries industry wants the commercial fish base to be maintained. Improved enforcement of pollution control legislation, preservation of habitat in the estuary, and salmonid enhancement are required.

iv) Unions want employment to be an objective of estuary management.

v) Natives are concerned about controls on economic development within Indian Reserves. The onus for protection of the environment should not fall on natives who were the last to develop their lands.

vi) Agricultural interests want the economic value of farming to be recognized and future values protected. Urban uses have alienated and inflated the price of farmland.

Additional farmland may be needed in the future to replace soil types that are being taken out of production.

Fraser River Estuary - government agency concerns -

i) Agencies responsible for managing port and port-related industrial development are concerned about encouraging, accommodating and servicing deep-sea and shallow-draft shipping. ...there is a strong feeling that the economic benefits of port development have not been adequately considered in past decision-making. This has led to excessive delays in project approvals and inflexibility by resource management agencies.

ii) Biological resource management agencies want to preserve remaining habitat in the estuary and ensure its continuing productivity. Historic habitat loss, cumulative effects of foreshore fill from hundreds of small projects, and impacts of major projects on river flow and patterns of sedimentation and erosion are all viewed as threats. Buildup of persistent pollutants such as heavy metals and organic contaminants can place long-term productivity at risk.

iii) Water quality management agencies seek to maintain good water quality by eliminating toxic pollutants, improving treatment of effluents, and improving monitoring and enforcement. ...discharges should be regularly monitored and illegal discharges should be halted through vigorous enforcement of existing regulations. Continued monitoring of effluents in receiving water is needed to provide a better base for future decisions.

iv) Local governments want greater involvement in guiding decisions by federal and provincial agencies which affect upland use. It is felt that the views of senior governments tend to dominate in estuary decision-making, that impacts on local communities are inadequately assessed, and that local needs are not considered.

Decisions affecting land use, resource management and major developments should consider official community and regional plans and also be assessed to reduce local impacts, such as noise, aesthetic impacts, and demands on transportation and services. Municipal councils and regional district boards and Indian bands should be consulted and their staff should be involved in estuary planning, decision-making and implementation.

Improved public recreation access points are needed, but municipalities lack funds to acquire them. Municipalities support high water quality but feel that they lack the authority to maintain water quality in tributaries and drainage ditches. In addition there is concern over the costs to local governments of programs for secondary treatment and source control. Lack of acceptable sites for municipal landfills is also a growing problem.

Local governments expect more direct accountability by senior governments for their actions which affect local government interests."

Obviously, reconciliation of such diverse interests would involve a sophisticated system of negotiation and bargaining in the development of goals, objectives, management strategies, and programs for implementation and monitoring. The next section of this paper addresses the difficult question of resolution of disputes which occur in a public interest context.

It should be noted that the Fraser River Estuary Management Plan officially came into being October 10, 1985, through the signing of a five-year agreement which included five major representatives: Environment Canada, the B.C. Ministry of Environment, the Federal Department of Fisheries and Oceans, the Fraser River Harbour Commission, and the North Fraser Harbour Commission. The Management Plan incorporates a central office in New Westminster to facilitate the operation of a coordinated project review process. The key components to the process are described in the Estuary Management Program's Annual Newsletter (issue No. 1, March, 1986):

i) Lead agencies (responsible for issuing leases or permits);

ii) Common application forms;

iii) A central project registry, at the Secretariat Office in New Westminster; and,

iv) An Environmental Review Committee. This Committee, composed of Environment Canada, Federal Fisheries and Oceans, and B.C. Ministry of Environment, reviews comments of environmental agencies on project proposals, advises lead agencies of environmental concerns relating to these proposals, and determines if further environmental review is required at more sophisticated levels.

The Secretariat office has continued to produce annual newsletters which indicate that steady progress is being made and, although it is beyond the scope of this paper to analyse the success of the program, it would appear that full implementation of the program will, like the process which led to its creation, take considerable time and effort. What appears to have been the main obstacle to the creation of FREMP will likely continue to be the main obstacle to continuing success: namely, the fragmented jurisdiction and enforcement authority of the many agencies involved, which the management program itself was intended to overcome. However, progress to date would indicate that all parties agree that the effort is worthwhile.

C. Integrated Resource Management and Planning: Summary

The material chosen for inclusion in this section is intended to illustrate, in a limited fashion, the scope of administrative knowledge and experience in B.C. pertaining to resource planning and management, and as well to provide a brief "primer" in the basic principles of this discipline. It is the opinion of this office that adequate administrative tools can be created to manage effectively and fairly the diverse resources within the coastal zone of the province. Fairness for individuals, companies, and communities demands that resources be managed and allocated in a manner which provides for a broad range of meaningful participation within a framework of long-range planning.

As a final note on the subject, it should be remembered that good planning requires good data; the Coastal Management systems of the American states reviewed in this report all allow for the vital functions of inventory gathering and mapping. This necessity has not gone unnoticed in British Columbia; the Ministry of Crown Lands is at present coordinating the development of a prototype computerized Geographic Information System (G.I.S.) which will provide an integrated, multi-use database. The prototype will be tested in the spring of 1989 for applications with the Ministry of Environment.

Apart from data collected for the CRIS study, there has as yet been little work done for coastal inventory purposes; however, the G.I.S. shows promise as an effective tool for the handling and interpretation of coastal data as it is acquired; its ultimate role as a component of integrated resource management would be vital.

PART VI

THE RESOLUTION OF PUBLIC INTEREST DISPUTES

- PUBLIC INTEREST DISPUTE RESOLUTION IN COASTAL RESOURCE GOVERNANCE: THE STATE OF THE ART IN B.C.
- WHEN SYSTEMS GET STUCK: RESOLVING PUBLIC INTEREST DISPUTES THROUGH A CONSENSUAL APPROACH.

Public Interest Dispute Resolution in Coastal Resource Governance: The State of the Art in British Columbia

In 1986 the Westwater Research Centre at the University of British Columbia published an insightful text entitled, "Bargaining in the Governance of Pacific Coastal Resources: Research and Reform". This book outlines the "governance challenge" and the state of bargaining among the various interests in the present coastal resource governance system. Bargaining, as the term is used by Westwater, encompasses negotiation and agreements within a spectrum of legal structure ranging from informal understandings to legislation.

The bargaining, of course, occurs among and between the various levels of government and private groups and individuals be they single land owners or commercial or community interests. It is helpful to review Westwater's analysis of four types of conflicts, arising within the context of resource management or allocation, which can be identified:

1. Cognitive conflict is rooted in different understandings of the situation. Example: while both fisheries biologists from the forest industry and biologists from fisheries agencies might be equally concerned about damage to fish in the case of log booming in the Cowichan Estuary, the disagreement might well be over whether the damage is in fact occurring.

2. Value conflict stems from different judgment about the ends to be accomplished by the action contemplated. Example: differences in two parties' judgments about the desirability of trade offs between environmental quality and economic growth.

3. Interest conflict: this occurs when there is disagreement about the distribution of the costs and benefits. It results from differences in judgments about who should pay and who should benefit.

4. Behavioural conflict is rooted in the personalities and circumstances of the interested parties.

The Westwater text goes on to outline certain basic principles of governance which should inform the bargaining process. The fact that these principles are expressed in almost constitutional terms reinforces the premise that they represent fundamental assumptions without which the bargaining process is likely to fail. The principles are outlined as follows:

1. All individuals have certain inalienable rights that cannot be violated by the courts, ordinary legislative actions or administrative organizations.

2. Individuals and groups should be treated fairly by society. From the principles of fairness stem expectations of how those legitimately involved in the bargaining processes of governance should be treated.

3. Subject to basic rights and fairness, the preferences and priorities of all individuals affected have equal merit in governmental decisions. In the governance of Pacific coastal resources, representatives are elected in this manner to three decision-making arenas: parliament, the Legislature and municipal councils. Regional districts and the Islands Trust are a fourth set of arenas but the representatives are not necessarily elected directly. The valuation of a governance system must assess how well procedures for leadership and accountability operate throughout the bargaining processes.

The principles of governance lead to the basic principles of bargaining. These principles were first presented by authors Fisher and Ury of the Harvard Negotiation Project in their book, "Getting to Yes":

1. Separate the people from the problem. While you should be soft on the participants, you should be hard on the problem that is to be resolved. The goal should be a wise outcome reached efficiently and amicably, and defined as "one which meets the legitimate interests of each side to the extent possible, resolves conflicting interests fairly, is durable, and takes community interests into account";

2. Focus on interests, not positions.

3. Invent options for mutual gain.

4. Insist on explicit criteria.

These principles in and of themselves do not provide a totally adequate foundation for the resolution of public interest disputes, but nonetheless represent "the state of the art" as at 1985. More recent publications, most notably a text entitled, "Breaking the Impasse", a result of the MIT - Harvard Public Disputes Program, have built upon these principles for the resolution of multi-party, multi-interest disputes in a public context.

Westwater's text emphasizes three questions in applying these governance and bargaining principles to the evaluation of the governance of Pacific coastal resources:

1. How well informed are the participants in the bargaining processes?

2. How adequate are the opportunities for informed participation or representation of affected interests in the bargaining processes?

3. How productive are the bargaining processes?

These are questions which cut to the heart of the process, and apply with equal force regardless of the techniques of bargaining being employed. The development of the argument continues, by drawing upon research by Mason and Mitroff,[14] to declare that "the best understanding of large inter-dependent, complex and uncertain systems can be achieved by structuring a debate among those possessing whatever knowledge is available." Mason and Mitroff, as quoted in Westwater's text, suggest that "real world problem solving methods must meet four criteria":

1. They must be "participative" because they must actively involve the individuals with relevant knowledge and whose interests are affected.

2. They must be "adversarial" in the sense that the best judgments result from constructively challenged assumptions and arguments.

3. They must be "integrative" because, while participative and adversarial processes can facilitate analysis, it is necessary to go on to synthesize coherent responses to complex problems.

4. They must be "mind supporting", because they must serve the individual's ongoing need for insight into the nature of the complexities and ways for coping with it that are credible to that person. (p.94).

These four criteria, as employed by Westwater in combination with the techniques of Fisher and Ury, represent an attempt to achieve broader application for the resolution of public interest disputes. This office would interpret the ultimate goal of this exercise as being to produce a set of principles for consensual resolution. The application of "adversarial" techniques in order to challenge assumptions and arguments constructively requires commitment, tolerance, and patience from the negotiating parties, and the results achieved will be directly proportional to the skills of the participants. It therefore comes as no surprise that it is argued later in the text that skills in communicating, challenging constructively, and bargaining successfully, must be increased through effective training and education in order to increase the productivity of the bargaining system. While the Westwater's text suggestions are both innovative and constructive, it should be noted that they are intended to be applied primarily within a context where explicit third party mechanisms (e.g. legislated appeal or mediation systems) are not available. The assistance of a trusted, neutral facilitator or mediator, knowledgeable and skilled in techniques of consensual dispute resolution, will be perhaps more vital to the process than trained participants. For complex, multi-party resource management or allocation disputes (in which some parties will inevitably have inordinate power and influence) it should not be expected or required that each party with a legitimate interest to bring to the bargaining table will possess the necessary skills.

It is interesting to note that the Westwater Research Centre classifies mariculture, that is, marine aquaculture as a classic "wicked" problem because the inter-dependence, complexity, and uncertainty of the issues to be resolved create questions which are not amenable to resolution by traditional techniques of analysis.

"Bargaining in the governance of Pacific Coastal Resources: Research and Reform" concludes with observations of weaknesses which continue to exist and hamper optimum effectiveness [and, this office would suggest, the fairness] of current institutional structures. It is the opinion of this office that the criticisms apply with equal force at the present time:

- The new institutional arrangements, with the important exception of those for conducting public enquiries and impact assessment, generally do not constrain bargaining but they also do not explicity recognize it;
- The formal structures for conducting public enquiries do not facilitate bargaining, but rather induce negative adversarial relations and encourage positional bargaining;
- Structures for facilitating bargaining and planning have generally received little development so far.
- Lack of leadership has greatly frustrated the bargaining processes.
- Without leadership and associated strategic planning to inform the bargaining, meaningful accountability has been impossible.

The Westwater text notes the fundamental importance of planning in order to provide a broad policy context within which the impact of specific projects can be assessed. However, it also notes that the planning which has occurred to date has had a primarily areal focus on the coast, being undertaken at the regional and sub-regional level, rather than coast wide.

WHEN SYSTEMS GET STUCK: RESOLVING PUBLIC INTEREST DISPUTES THROUGH A CONSENSUAL APPROACH

This section briefly examines the nature of public interest disputes involving citizens and their government and considers alternatives to litigation for resolving them. In doing so, it recognizes the massive impact of the public sector on modern society. While administrative action is the most intrusive and dominant influence on all of our personal, commercial and social interests, traditional legal remedies and processes are frequently impotent to hold the public sector accountable for the fair and effective reconciliation of apparently adverse interests.

The types of disputes previously referred to in this paper involve competing demands for public resource use and allocation rights. These should be distinguished from disputes involving pure constitutional issues, contract terms or tort claims. The courts are very effective in interpreting the law, determining fault and assessing damages. They may also play a vital role in defining rights in situations where legislation is lacking or provides little guidance, and where the common law does not provide clear direction. However, the adversarial process is not well suited for achieving an enduring solution to various competing but legitimate interests within and between governments and private individuals and corporations.

While litigation may not be the most appropriate way to resolve public interest disputes, the public administration itself is often incapable of responding sensitively to competing interests. Administrative policy and practice must be adapted to act more fairly and effectively in the first instance so that the urge or need to litigate does not arise.

All of the public and private interests mentioned in this paper are legitimate, compelling and often competing. They are also interdependent and the failure to reconcile them will be to the detriment of all. However, neither the courts nor the current administrative structure may well be suited to ensure a balanced and enduring resolution. Clearly, an integrated and consensual process is required which will identify the common interests among the various parties and achieve a result to which all can voluntarily subscribe.

A. Litigation Concerns

Litigation will almost always be the least appropriate way to resolve public interest disputes for the following reasons:

1. The interests and issues are usually too numerous to benefit from an adversarial process and a simple win-loss decision. Characteristic of public interest disputes is the interdependence of the various competing interests. Effective resolution requires a voluntary crafting of mutually acceptable terms and trade offs, and the adversarial court process is ill suited to this need.

2. The expenses and delays involved in complex litigation may favour parties with the greatest resources, but not necessarily with the highest and most legitimate degree of interest.

3. Private interests will never be the equal adversary in litigation given government's effectively limitless resources, its political and institutional stake in its own policies, and its control over information.

4. Many administrative and executive decisions and actions of government are non-reviewable on their merits and therefore there is simply no remedy at law to their potential unfairness or unreasonableness.

5. Where litigation succeeds in changing or setting aside government action, the result may simply be avoided by a subsequent change in the legislation or in the process by which an offending decision or action was taken.

6. Government has a harmonizing role in society as well as a regulating one, and it is often unseemly and inappropriate for it to be in court with its citizens. Because of its special responsibilities, government owes a duty of fairness to individuals in society which can go well beyond bare statutory or other legal mandate and responsibility. The courts can not deal with such fairness issues. Indeed, as soon as litigation commences or is even contemplated, positions harden along legalistic lines and broader fairness issues can get lost.

7. Court decisions are imposed against the will of the losing parties. As such, in public interest disputes, although they may create legal rights they are unlikely to attract the cooperation necessary for continuing enjoyment of those rights. Adverse publicity campaigns, continuing legal challenges, civil disobedience, political agitation and simply a lack of necessary cooperation can eliminate stability from a court awarded victory.

8. Courts are not well suited to resolving the dynamic issues in situations that often arise in public interest disputes. A resolution must be sufficiently flexible to allow for changing circumstances and the inability or unwillingness of courts to play a monitoring role reduces their effectiveness in resolving such disputes.

9. Public interest disputes are often miscast as one dimensional battles between economic and social interest, with recourse to litigation seen as the only way to divide the spoils or declare the victor. Yet the courts are not well suited to providing a solution which is flexible, self-regulating, enduring and mutually productive. Social harmony, political consensus and economic competitiveness are essential objectives in public interest disputes. All are poorly served by an adversarial process which imposes settlements, drains resources and distinguishes winners and losers.

B. Consensual Resolution

The consensual resolution of public interest disputes requires a recognition by all major private and public interests that the best chance of achieving their individual objectives will occur through the enhancement rather than at the expense of apparently competing interests.

This is a building process rather than a destructive one. It exhibits the following major characteristics:

1. While it requires creativity, patience and goodwill, it does not require self sacrifice. In fact, self interest is its sustaining force.

2. Because the various interests will value aspects of the public issue differently, resolution packages can be crafted which satisfy each party's major concerns while trading off less vital ones.

3. The interdependence of interests empowers even relatively minor stakeholders to be valued partners in the resolution, rather than bothersome but beatable opponents.

4. It is a negotiated process, not an adversarial one, which will likely require the assistance of a trusted, neutral facilitator or mediator to ensure free communication, full disclosure and balanced participation.

5. It is essential that all significant interests voluntarily involve themselves in the process, through the participation of a legitimate and authorized representative. Each party must believe that its particular interest will be better served by a negotiated settlement than by an imposed one. If any one party believes it can win the dispute outright, judicially or politically, then the process will not work.

6. The process requires each party to define its objective in positive terms, rather than negatively saying what it absolutely doesn't want some other party to do. By thinking in terms of what it wants to achieve, each group becomes better disposed to accommodate apparently competing interests by concentrating on creative alternatives for reconciling them.

7. Government must show leadership in promoting consensual resolution rather than confrontation. It may be required to fund the mediation, research, resource and representation costs of some or all of the parties to ensure full and effective participation in the process.

8. Because solutions are voluntarily entered into, they will be self-regulating and enduring. Because they have been designed through a process based on openness and respect, the positive relationship will allow flexible adjustment of terms to meet changing circumstances in the future.

9. Business interests will gain from stability and certainty in the exercise of commercial rights, and from an enhanced reputation as good corporate citizens.

10. Special interest groups will play an influential role in designing solutions to difficult public conflicts. They will be recognized as legitimate participants introducing important concerns to the process rather than strident and absolute positions.

11. Where scientific, technical, legal or other experts are required to advise the process, they should not be engaged to align with particular interests, but rather to develop a common set of acceptable assumptions, standards or conclusions on which joint decision-making can be based.

12. The legal profession will undoubtedly play a major role in consensual negotiation as mediators, counsel or expert advisors. More fundamentally, lawyers must be able to redefine the notion of success for their clients. Public interest disputes are often won, not through winner-take-all but often illusory court victories, or through cost and risk cutting compromises, but rather through voluntary, enduring, mutual-gain solution building.

13. Our overburdened court system would clearly enjoy the absence of protracted, multi-party public interest law suits to which its remedial tools are not well suited. It may be that judges can assist the diversion of such disputes by appointing or recommending pre-trial or mid-trial mediators or masters to work with the parties towards consensual resolutions under the alternative threat of a costly and inadequate court imposed settlement which may fail to meet any party's major interest.

14. Consensual resolution requires courage from the participants. Single interest confrontation is straight-forward in that each representative feeds off the support of his or her interest group. However, it takes boldness and skill to bring one's own group over to supporting another group's objectives in its own enlightened self-interest.

15. Fundamentally, consensual resolution is a reasoning process rather than a coercive one; as such, it is immensely more powerful. A reasoning process stimulates a voluntary change in the way of thinking which endures to the benefit of all parties in the future. By building understanding and respect among the parties, it generates productive energy. In contrast, a coercive process drains energy from all parties and produces a weak outcome by leaving embittered and resistant losers.

Application of Consensual Dispute Resolution: Aquaculture

While there is an obvious multiplicity of interests in the administration and management of the British Columbia coastline, many of which appear to be diametrically opposed, there is nonetheless no need for these interests to be engaged in destructive opposition with one another. Environmental quality is as important to entrepreneurs investing in a vulnerable stock as to conservationists concerned with a vulnerable wilderness; broad and meaningful participation in long range planning at once satisfies all the community and individual interests in protecting property, the government concern to make decisions based on all relevant information, and the business need for a certain and stable investment climate. Integrated management of abundant but finite coastal resources can put different areas to the appropriate and optimum use of each distinct interest; and revitalized coastal economies will help to finance the preservation and enhancement of other interests.

The administrative practices and consensual initiatives discussed above can be applied towards a resolution of the aquaculture controversy. Similarly, the approach is appropriate to resolving a wide range of public interest disputes which otherwise divide society and frustrate our judicial system. Rapid transit systems, pesticide use on public lands, hazardous waste disposal, natural resource allocation and land use decisions, aboriginal rights issues and countless others are both amenable to consensual resolution and inappropriate for judicial intervention.

The various elements of this approach are not novel. It is clearly recognized, for example, that voluntary collective bargaining will produce the most enduring and mutually beneficial results to both labour and management; and mediated settlements in family disputes work to everyone's advantage. However, as our communities become more pluralistic, as our natural resources become less abundant, as society becomes more interdependent and as international economic competition becomes more fierce it is clear that public interest litigation is not the answer. We simply can not afford the debilitating waste of energy and good will that such disputes cause or the cost and burden of government regulation and judicial intervention required to control them.

Instead, individual self-interest must be creatively and realistically identified as being inextricably linked to that of other interests in society. The consensual resolution of public interest disputes requires maturity and clear thinking, but it has the potential to promote social harmony and economic growth in an otherwise complex and threatening environment.

A most notable and successful example of consensual dispute resolution within the context of integrated resource management is the Timber, Fish, Wildlife Agreement (TFW) negotiated in Washington State. It represented a radical departure from the traditional method of reconciliation of interests, which was to fight fierce battles in State Legislatures, the State courts, Ministry bureaucracies, Federal courts, in Congress, or the White House. A description of the background, negotiation process and applicability to the Canadian context of the TFW Agreement is provided in Appendix 13.

PART VII

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

This report concludes with three major recommendations, with sub-recommendations for each:

RECOMMENDATION 1:

The government should reconsider the statutory authority for the administration of aquaculture with a view to the enactment of a separate Aquaculture Act, or other statutory scheme which gives clear, coordinated and express authority in this area.

It has been stated that the creation of such an Act would require administration by a "neutral agency", and would create anomalies and inconsistencies among programs administered by other agencies. This is not an insurmountable burden and in fact is encountered and overcome when most new legislation is introduced. While it would be possible to amend the Land Act to provide a statement of objective and binding criteria, this may not adequately meet the needs of the industry or coastal communities, given the inter-disciplinary, inter-ministerial nature of the subject. A separate Aquaculture Act would not prevent government from playing an active role in promoting aquaculture in the context of regional and economic development. It would simply mean that the decision-makers charged with performing regulatory functions should be required to give due consideration to all affected parties in the administration of the Act. Conflict is likely to be substantially reduced if the aquaculture industry can be clearly seen to be the subject of impartial regulation.

An alternative route, although somewhat fragmented, is for amendments to be made to existing legislation such as the Land Act, the Fisheries Act, and the Waste Management Act, or regulations thereto, to deal specifically with aquaculture issues. Any such regulatory amendments should be consolidated under a single Order in Council, for clarity and ease of reference.

It is a matter of legislative policy, on which this office expresses no opinion, as to whether an Aquaculture Act should incorporate land allocation (leasing or licencing) provisions. The approval of a management plan to carry on the practice of aquaculture, and the granting of tenure to occupy a parcel of aquatic land exclusively, are separate and distinct processes. However, whatever mechanism is employed, the legal requirements should have a published statutory foundation, whether through an Aquaculture Act, amendments to the Land Act, or other legislation.

(a) An Aquaculture Act, or alternatively amendments to existing statutes and regulations, should emphasize the following elements in its design, in order to maximize certainty and administrative fairness:

i) facility siting consistent with long-term development plans produced through application of principles of integrated resource management with meaningful participation for all affected parties;

ii) siting and operational requirements consistent with high standards of environmental integrity with provision for effective environmental monitoring and reporting. Aquaculture facilities should not only have a duty to participate in maintaining environmental integrity, but should also be able to rely on provisions aimed at protecting the quality of their own water supply, whether fresh or marine;

iii) efficient appeal mechanisms which would provide access by all significantly affected parties to an independent, expert tribunal, prior to a final grant of tenure;

iv) explicit recognition of the authority of local or regional governments to establish areas in which specific aquacultural activities may be limited;

v) the property rights of aquaculturists to the cultured species being raised within their facilities, to provide legal assurance of ownership, including the ownership of escaped fish within a prescribed radius of the facility;

vi) provision for the office of an Aquaculture inspector, with broad powers of investigation, to enforce the legislative requirements;

(b) Ministry policies (the manner in which a Ministry interprets and implements its mandate as determined by statute or ministerial directive) should be published in plain language and made readily available.

(c) The inter-ministerial (and inter-group) referral system, by which information on a proposed aquaculture installation is solicited from interested and affected parties, should provide for exchange of referral comments and information among the referees, and written reasons should be provided by the appropriate ministry (e.g., Crown Lands and/or Agriculture and Fisheries) to explain and justify decisions made or action taken.

In addition, there should be, in situations where referral comments indicate significant conflict, a further period for rebuttal comments to be circulated among the referral entities.

(d) A neutral Impact Assessment mechanism should be integrated into the overall aquaculture facility licencing and permitting structure. It should be open to public involvement, with written reasons provided for decisions made. However, it should not require such expense or delay that meritorious projects would suffer unduly, which in itself would constitute administrative unfairness.

(e) Visual impact and site-specific facility design criteria should be developed to maximize "blending" of aquaculture facilities with their surroundings, particularly in areas where such development has not been previously introduced.

(f) Internal and external appeal processes relating to facility siting, granting of tenure (lease or licence), and facility operations (e.g., impact beyond waste management limits) should be put into place, and be available to all significantly affected parties. The external appeal body should be independent and expert, with at least one member knowledgeable in principles of administrative law. If the Land Act is to continue to be employed as the governing statute for aquatic land allocaion, the appeal provision (s. 59) should be replaced with internal and external appeal systems which reflect the basic tenets of administrative fairness as set out herein. Opportunities for consensual dispute resolution should be available as alternatives to these appeal processes: see Recommendation 3.

(g) **Advertisements giving notice of application for disposition of Crown land should clearly indicate, in non-technical terms, with words and diagrams, the location and size of the proposed facility.** Signs posted on land should face the water and any nearby travelled roads; location on the proposed development area should be designated; for maximum visibility they should be readable from a reasonable distance, e.g. 30 metres. Because a parcel of "aquatic land" is of necessity travelled by marine transportation, notice to the marine community or nautical commuters should be provided by means of a clearly visible sign attached to a coloured buoy anchored at or near the centre of the proposed tenure.

RECOMMENDATION 2:

A framework for integrated management of resources and activities in the coastal zone should be created, with appropriate enabling legislation, as a mechanism to enhance administrative fairness in all aspects of coastal planning, resource allocation, and management by Provincial Ministries.

Note: A new "coastal zone management" Ministry need not be created. What is suggested is an integration, through specifically stated priorities, of existing management capabilities. It is inevitable, however, that an office - perhaps in the nature of a Secretariat - would be required to provide coordination, review, and reporting functions.

(a) **Coastal management should emphasize and facilitate community planning and control.** Community plans, produced in conformity with provincial goals and objectives, appear to be a useful vehicle for maximizing administrative fairness and minimizing conflict if a litigation model is to be avoided.

(b) **Public participation should be given explicit priority and accommodation at all stages of coastal planning processes.** This is a corollary of (a) above.

(c) **An inventory of coastal resources, produced in cooperation with local municipalities or regional districts, should be created as the foundation for coastal planning.** Recommendation 1(D) of the Coastal Zone Resource Sub-Committee (Appendix 11) would appear to be a good model for resource inventory and related information-gathering functions.

(d) **A comprehensive set of priorities (as was articulated in the proposal for a Fraser River Estuary Management Plan) should be produced, published, and refined through broad public participation.** From these can be produced specific goals and objectives, which can then be translated into specific managment plans to provide a framework within which local government can establish its own priorities. Publication of priorities - providing citizens with a long-range view of what is contemplated or proposed - is essential to maximizing administrative fairness within the context of resource allocation and management.

(e) **The concept of "highest and best use", as employed by the Ministry of Crown Lands to determine appropriate use of specific parcels of land, (or aquatic land) should be abandoned and replaced with sound integrated resource management criteria.** "Highest and best use" most often is equated with maximum economic yield, and may therefore conflict with values advanced by other Ministries, conservationists, environmentalists, tourism and recreational interests, or Native Indian bands.

RECOMMENDATION 3:

Consensual dispute resolution (CDR) techniques, as outlined in this Report (pp. 89 - 96) should be recognized, promoted, and applied as official policy by all relevant Ministries, and should, as appropriate, be recognized and implemented through amendments to existing legislation. CDR techniques should be available as an option for the resolution of aquaculture-related disputes which may occur at any stage of the priority development or project development process.

There remain a number of potentially contentious matters noted below which are beyond the jurisdiction of the Office of the Ombudsman, and upon which no opinion is expressed. However, these concerns may be amenable to a process of consensual dispute resolution:

- rights and desires of Native groups to control, be involved in, or limit aquaculture development;
- impact on the commercial fishing and fish processing industries (both economically through competition and by potential effects on wild salmon stocks) of salmon net-pen operations;
- use of antibiotics in fish husbandry and the possibility of introduction of residues into the human food chain;
- use of anti-foulant chemicals on fish farm nets and their impact on the surrounding environment and aquatic species, and potential questions concerning chemical residues entering the human food chain;
- impact of net-pen facilities in general upon the environment, and the degree to which the seabed, aquatic organisms, and adjoining waterfront areas are affected;
- labelling of farmed fish as to their origin, at point of sale.

The above issues often involve diametrically opposed claims which purport to be based on valid scientific data. With expert pitted against expert, and no independent, authoritative agencies involved to mediate the dispute, it is no surprise that an impasse on any of these matters may be quickly reached.

There are also social and economic policy matters beyond the jurisdiction of this office which form the context for the advancement of competing claims. Collectively, these questions make a compelling case for the creation of consensual dispute resolution mechanisms which will allow the facts to be determined neutrally and creative options for the mutual enhancement of interests to be explored.

FOOTNOTES

1. Marden, **The Continental Shelf: Man's New Frontier**, 153 National Geographic 495 (Ap. 1978), quoted in Bowden, Gerald, **Coastal Aquaculture Law and Policy: A Case Study of California**, Boulder, Colorado: Westview Press, 1981, p. 1.

2. R.S.B.C. 1979, c. 214.

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4. R.S.C. 1970, Chapter F-14.
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7. R.S.B.C. 1979, c. 137.
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11. Source: **Development of Aquaculture in Sweden**, by Hans Ackefors, published by the Swedish Council for Planning and Coordination of Research, in collaboration with the National Marine Resources Commission, 1983

12. Sources: Fiskeridepartementet Informerer. **Fish Farming - Act of 14th June 1985, No. 68, relating to the breeding of fish, shell fish, etc.** (With comments on the individual provisions in the proposal for the Act).

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13. Government of Canada and Province of British Columbia **A Living River by the Door - A proposed Management Program for the Fraser River Estuary.** March, 1982, pp.16-18.

14. Mason, R.O., and I.I. Mitroff. 1981. **Challenging Strategic Planning Assumptions: Theory, Cases and Techniques.** New York: John Wiley and Sons.

APPENDICES

1. Diagram: Net-pen facility (courtesy Ministry of Agriculture and Fisheries)

2. Aquaculture Licencing and Approval Flowchart

3. Distribution of legislative jurisdiction over foreshore and sub-aquatic lands in British Columbia (From Tynan, B.)

4. Swedish application and referral process (From Ackefors, H., "Development of Aquaculture in Sweden")

5. Excerpts from Washington State "Aquaculture Siting Study"

6. Washington State Shoreline Management Act of 1971 (excerpts); Coastal Zone Management Act of 1972 (U.S./Federal excerpts)

7. Etolin Island area Mariculture Pilot Project final report, re coastal use conflict and siting guidelines. (excerpts)

   Alaska Coastal Zone Management Program (excerpts from statute); Alaska Coastal Zone Managmement Program - 1986 Annual Report (excerpts)

8. Oregon Coastal Management Program Summary

9. Fraser River Estuary Mangement Program - flowchart (from "A Living River By the Door")

10. Aquaculture Industry Overview: Statistics

11. Excerpt from Summary of Recommendations of Coastal Zone Resource Sub-Committee (May 1977)

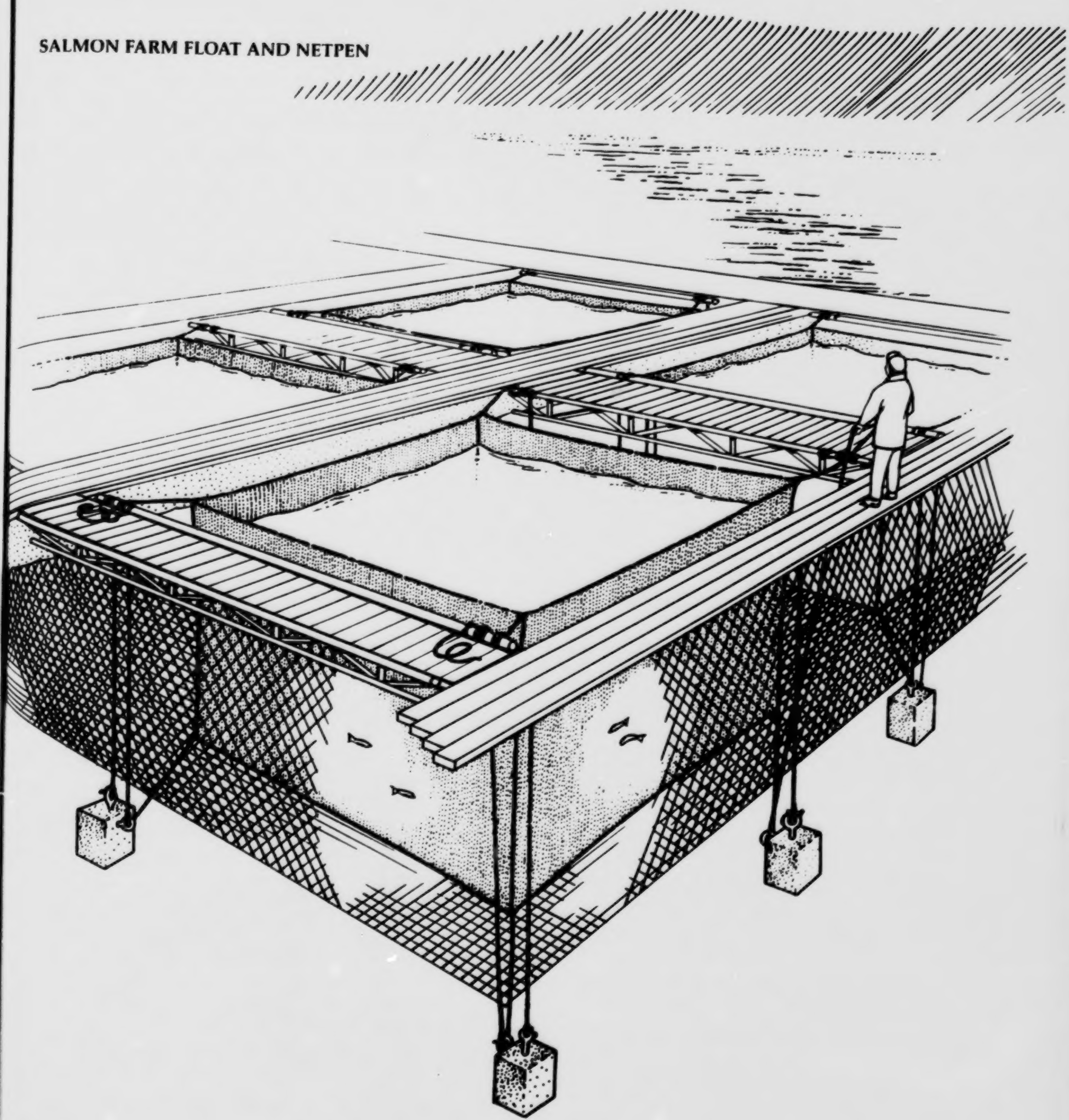
12. Possible impacts of a salmon farm upon the marine environment (courtesy Ministry of Environment and Parks)

13. Commentary on Washington State Timber, Fish and Wildlife Agreement.

APPENDICES

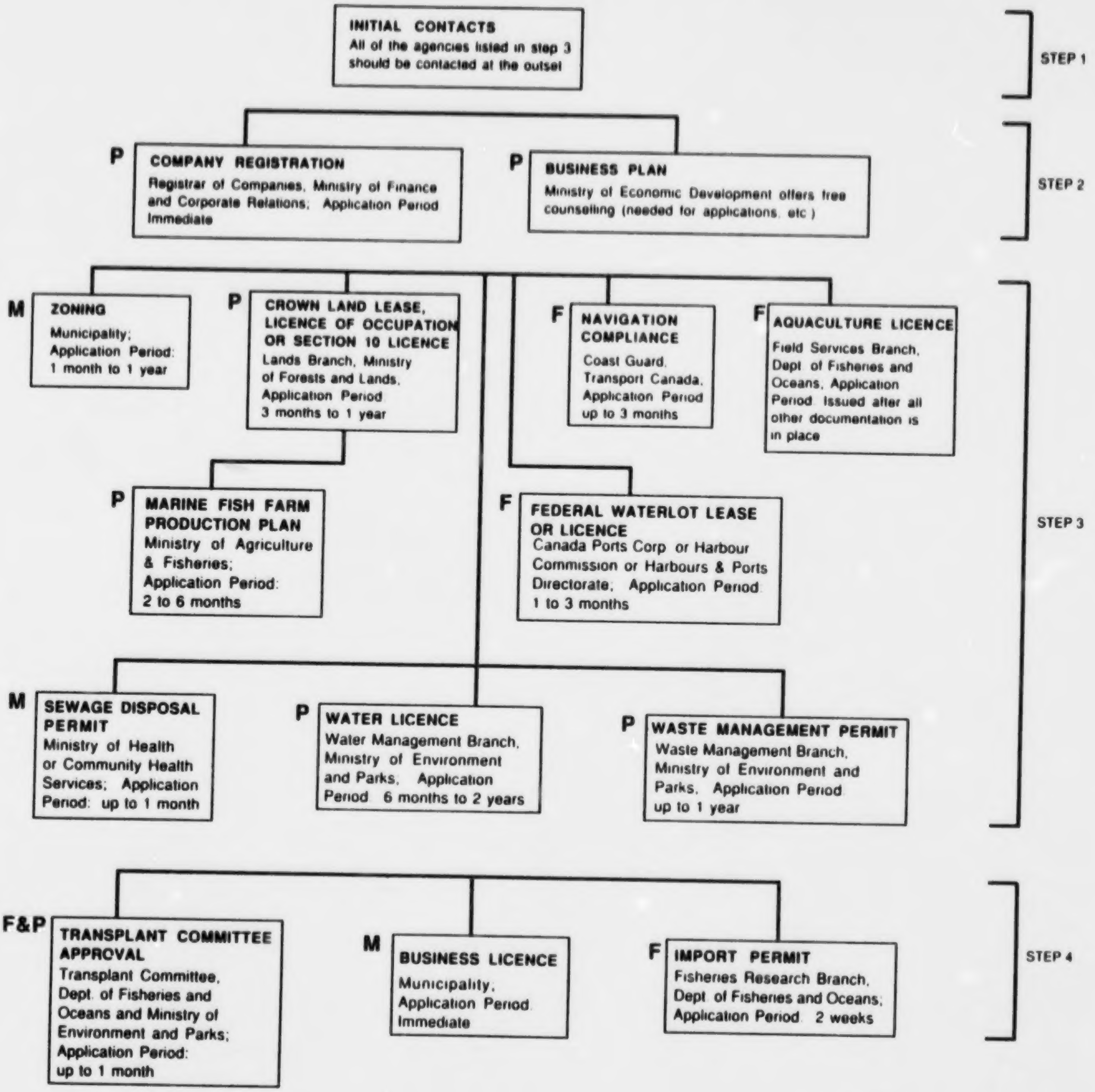
1. Diagram: Net-pen facility (courtesy) Ministry of Agriculture and Fisheries)

SALMON FARM FLOAT AND NETPEN



2. Aquaculture Licencing and Approval Flowchart

FIGURE 4. PERMIT AND LICENCE STRUCTURE FOR MARINE FINFISH CULTURE.


INITIAL CONTACTS
All of the agencies listed in step 3 should be contacted at the outset
STEP 1
P
COMPANY REGISTRATION
Registrar of Companies, Ministry of Finance and Corporate Relations; Application Period Immediate
P
BUSINESS PLAN
Ministry of Economic Development offers free counselling (needed for applications, etc.)
STEP 2
M
ZONING
Municipality; Application Period: 1 month to 1 year
P
CROWN LAND LEASE, LICENCE OF OCCUPATION OR SECTION 10 LICENCE
Lands Branch, Ministry of Forests and Lands, Application Period 3 months to 1 year
F
NAVIGATION COMPLIANCE
Coast Guard, Transport Canada, Application Period up to 3 months
F
AQUACULTURE LICENCE
Field Services Branch, Dept. of Fisheries and Oceans, Application Period. Issued after all other documentation is in place
P
MARINE FISH FARM PRODUCTION PLAN
Ministry of Agriculture & Fisheries; Application Period: 2 to 6 months
F
FEDERAL WATERLOT LEASE OR LICENCE
Canada Ports Corp. or Harbour Commission or Harbours & Ports Directorate; Application Period 1 to 3 months
STEP 3
M
SEWAGE DISPOSAL PERMIT
Ministry of Health or Community Health Services; Application Period: up to 1 month
P
WATER LICENCE
Water Management Branch, Ministry of Environment and Parks, Application Period 6 months to 2 years
P
WASTE MANAGEMENT PERMIT
Waste Management Branch, Ministry of Environment and Parks, Application Period up to 1 year
F&P
TRANSPLANT COMMITTEE APPROVAL
Transplant Committee, Dept. of Fisheries and Oceans and Ministry of Environment and Parks; Application Period: up to 1 month
M
BUSINESS LICENCE
Municipality, Application Period Immediate
F
IMPORT PERMIT
Fisheries Research Branch, Dept. of Fisheries and Oceans; Application Period 2 weeks
STEP 4

F = Federal
P = Provincial
M = Municipal

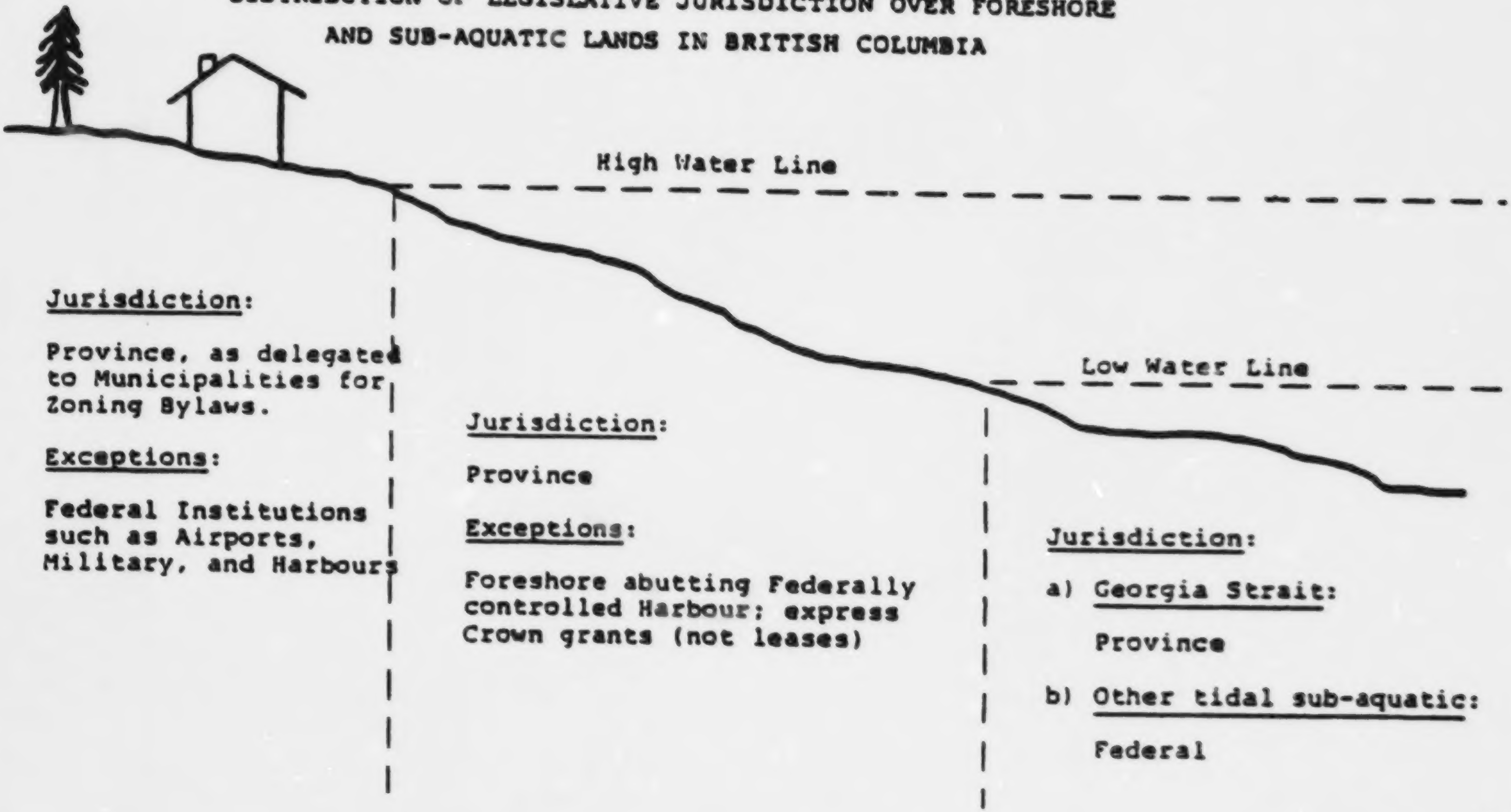
1) Permits or licences listed are not required in all instances.
Contact the agencies indicated to determine the individual requirements for specific farms

2) Marine Fish Farm Production Plan was previously called Salmon Farm Management Plan

Source: Marine Resources Section, Commercial Fisheries Branch, B.C. Ministry of Agriculture and Fisheries, Victoria. Reproduced with permission.

3. Distribution of legislative jurisdiction over foreshore and sub-aquatic lands in British Columbia
(From Tynan, B.)

DISTRIBUTION OF LEGISLATIVE JURISDICTION OVER FORESHORE AND SUB-AQUATIC LANDS IN BRITISH COLUMBIA



__Jurisdiction__:

Province, as delegated to Municipalities for Zoning Bylaws.

__Exceptions__:

Federal Institutions such as Airports, Military, and Harbours

__Jurisdiction__:

Province

__Exceptions__:

Foreshore abutting Federally controlled Harbour; express Crown grants (not leases)

__Jurisdiction__:

a) __Georgia Strait__:

Province

b) __Other tidal sub-aquatic__:

Federal

4. Swedish application and referral process (From Ackefors, H., "Development of Aquaculture in Sweden")

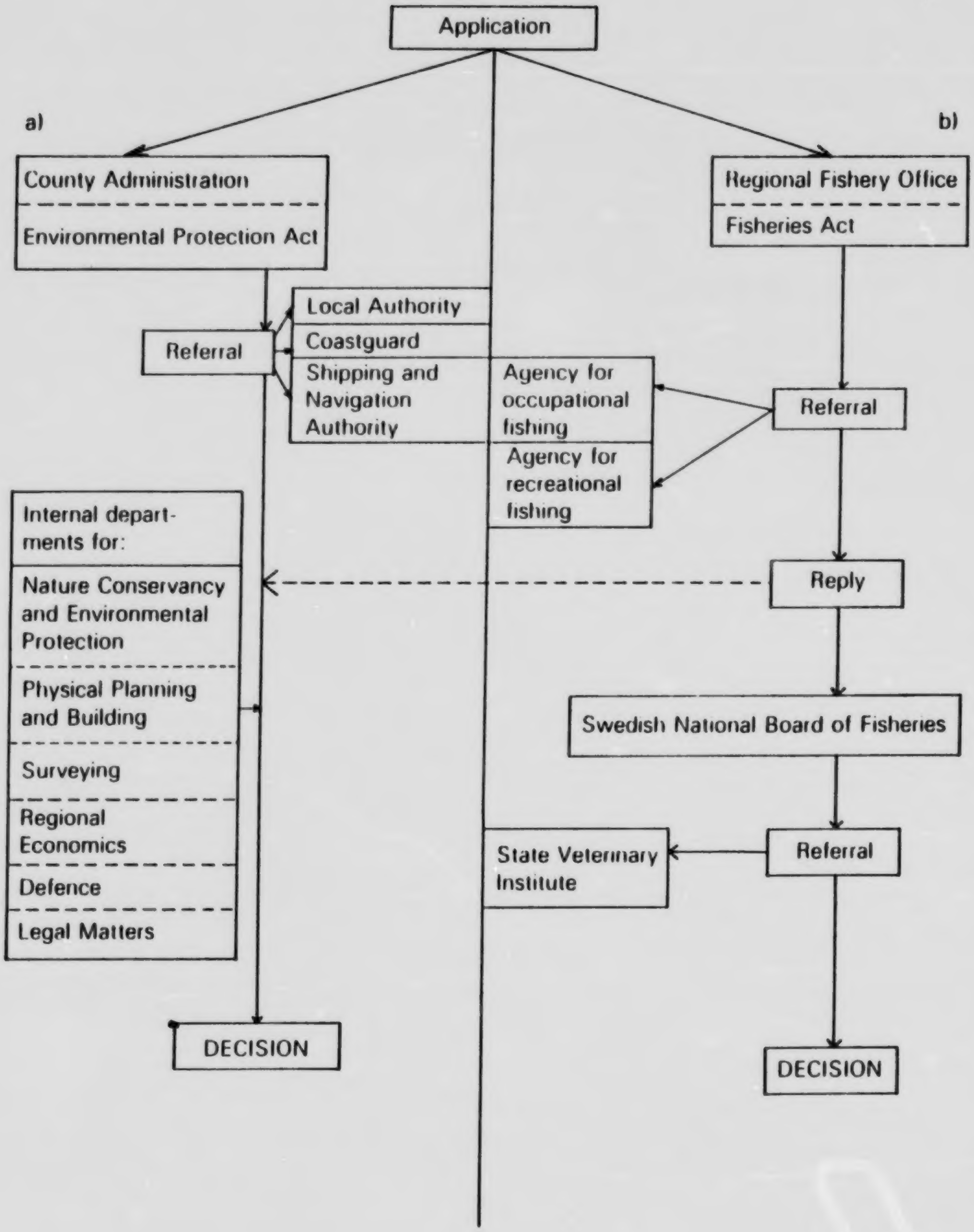
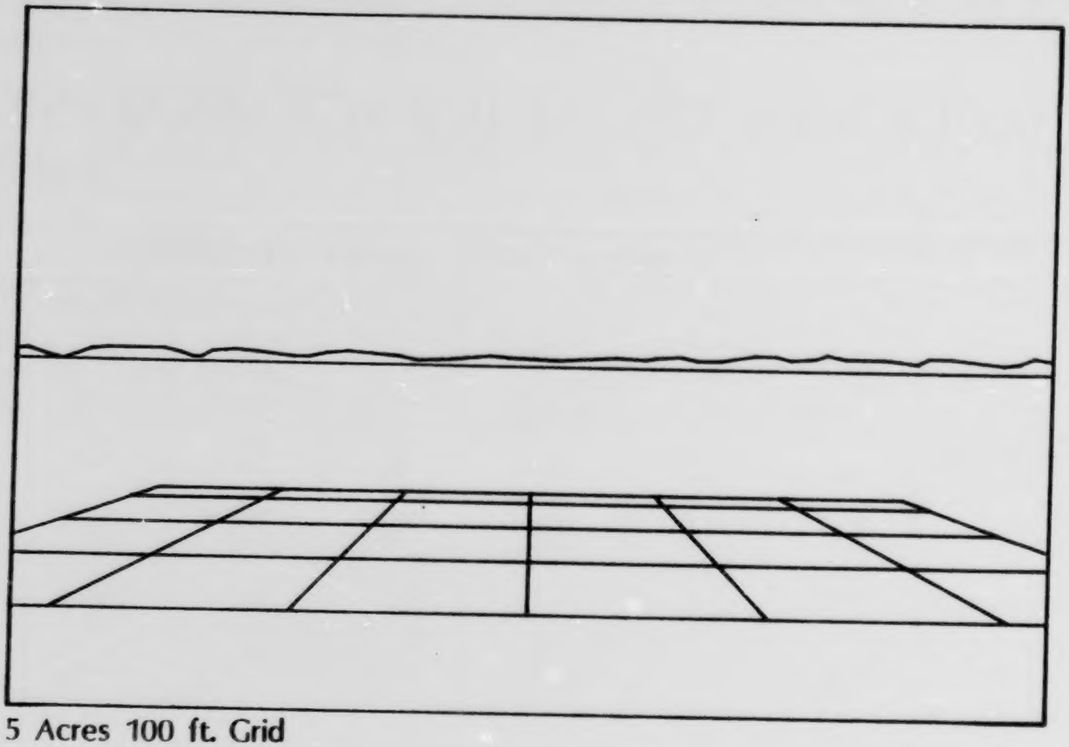
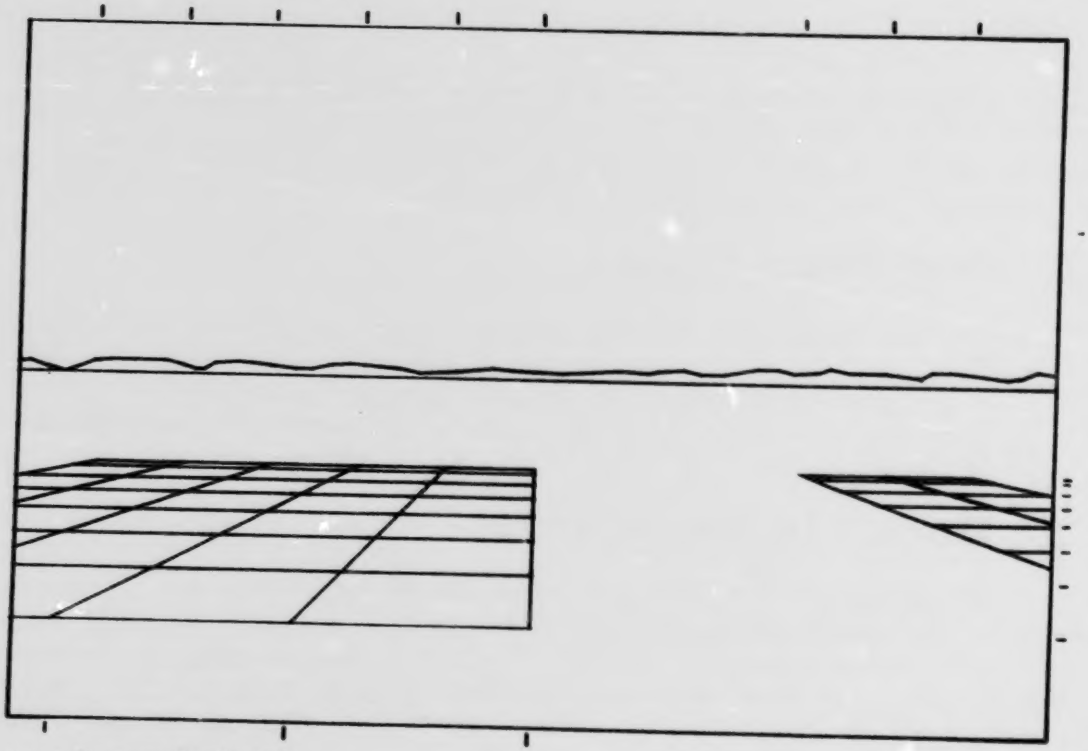

Application
a)
b)
County Administration
Environmental Protection Act
Regional Fishery Office
Fisheries Act
Referral
Local Authority
Coastguard
Shipping and Navigation Authority
Agency for occupational fishing
Agency for recreational fishing
Referral
Internal departments for:
Nature Conservancy and Environmental Protection
Physical Planning and Building
Surveying
Regional Economics
Defence
Legal Matters
Reply
Swedish National Board of Fisheries
State Veterinary Institute
Referral
DECISION
DECISION

Figure 12. Routes by which an application for aquaculture is dealt with (a) by the County Administration in accordance with the Environmental Protection Act, and (b) by the Swedish National Board of Fisheries in accordance with the Fisheries Act.

5. Excerpts from Washington State "Aquaculture Siting Study"



5 Acres 100 ft. Grid



(2 Adjacent Projects)
7.5 and 3 Acres 100' Grid

Distance Offshore: 300 ft.
Observer Position: 105 ft. Above Sealevel

Typical Aquaculture Facility

Figure 7 Computer Simulation - View 4

AQUACULTURE VISUAL IMPACT ANALYSIS

		sensitivity level/visibility						
		High Sensitivity High Visibility	High Sensitivity Moderate Visibility	High Sensitivity Low Visibility	Moderate Sensitivity High Visibility	Moderate Sensitivity Moderate Visibility	Moderate Sensitivity Low Visibility	Low Sensitivity Any Visibility Category
scenic quality	Wilderness Areas	I	I	I	I	I	I	I
	HIGH	II	II	III	III	III	III	III
	MODERATE	II	III	III	III	III	IV	IV
	LOW	III	III	III	III	III	IV	IV

Visual Impact Classifications:

Class I (Wilderness Areas) - **Severe Visual Impact**

Any permanently visible aquaculture facility will likely have a severe visual impact that cannot be mitigated.

Class II - **High Visual Impact**

Areas where permanently visible aquaculture facilities will likely be visually obtrusive. To mitigate impact, project scale should be small enough not to call attention to itself or be located so not to be visually evident from key viewing points. Project design should borrow from the colors of the natural setting.

Class III - **Moderate Visual Impact**

Areas where permanently visible aquaculture facilities will be visually evident. To mitigate impact, project should remain visually subordinate to the project setting. Project design should borrow from the colors of the natural setting. Scale should be small enough so not to cover more than 10% of the cone of vision as seen from Key observation points.

Class IV - **Low Visual Impact**

Areas where existing visual disruptions dominate (Industrial Landscapes); or areas of low sensitivity / Visibility. Most aquaculture facilities are unlikely to have an adverse visual effect. Few, if any, mitigation measures are necessary.

6. Washington State Shoreline Management Act of 1971 (excerpts); Coastal Zone Management Act of 1972 (U.S./Federal excerpts)

Chapter 90.58 RCW
SHORELINE MANAGEMENT ACT OF 1971

Sections

90.58.010 Short title.
90.58.020 Legislative findings——State policy enunciated——Use preference.
90.58.030 Definitions and concepts.
90.58.040 Program applicable to shorelines of the state.
90.58.050 Program as cooperative between local government and state——Responsibilities differentiated.
90.58.060 Timetable for adoption of initial guidelines——Public hearings, notice of.
90.58.070 Local governments to submit letters of intent——Department to act upon failure of local government.
90.58.080 Timetable for local governments to complete shoreline inventories and master programs.
90.58.090 Approval of master program or segments thereof, when——Departmental alternatives when shorelines of state-wide significance——Later adoption of master program supersedes departmental program.
90.58.100 Programs as constituting use regulations——Duties when preparing programs and amendments thereto——Program contents.
90.58.110 Development of program within two or more adjacent local government jurisdictions——Development of program in segments, when.
90.58.120 Adoption of rules, programs, etc., subject to RCW 34.04.025——Public hearings, notice of——Public inspection after approval or adoption.
90.58.130 Involvement of all persons and entities having interest, means.
90.58.140 Development permits——Grounds for granting——Administration by local government, conditions——Applications——Notices——Rescission——When permits not required——Approval when permit for variance or conditional use.
90.58.145 Substantial development permit——Structures at temporary ferry terminals——Hood Canal bridge——Removal of structures.
90.58.150 Selective commercial timber cutting, when.
90.58.160 Prohibition against surface drilling for oil or gas, where.
90.58.170 Shorelines hearings board——Established——Members——Chairman——Quorum for decision——Expenses of members.
90.58.175 Rules and regulations.
90.58.180 Appeals from granting, denying, or rescinding permits, procedure——Board to act, when——Local government appeals to board——Grounds for declaring rule, regulation, or guideline invalid——Appeals to court, procedure.
90.58.190 Review and adjustments to master programs.
90.58.200 Rules and regulations.
90.58.210 Court actions to insure against conflicting uses and to enforce——Civil penalty——Review.
90.58.220 General penalty.
90.58.230 Violators liable for damages resulting from violation——Attorney's fees and costs.
90.58.240 Additional authority granted department and local governments.
90.58.250 Department to cooperate with local governments——Grants for development of master programs.
90.58.260 State to represent its interest before federal agencies, interstate agencies and courts.
90.58.270 Nonapplication to certain structures, docks, developments, etc., placed in navigable waters——Nonapplication to certain rights of action, authority.
90.58.280 Application to all state agencies, counties, public and municipal corporations.
90.58.290 Restrictions as affecting fair market value of property.
90.58.300 Department as regulating state agency——Special authority.
90.58.310 Designation of shorelines of state-wide significance by legislature——Recommendation by director, procedure.
90.58.320 Height limitation respecting permits.
90.58.330 Study of shorelines of cities and towns submitted to legislature——Scope.
90.58.340 Use policies for land adjacent to shorelines, development of.
90.58.350 Nonapplication to treaty rights.
90.58.360 Existing requirements for permits, certificates, etc., not obviated.
90.58.500 Exemption from this chapter for emergency recovery operations from Mt. St. Helens eruption authorized——Compliance with objectives required——Sediment retention structure exempt from RCW 90.58.030(3)(e)——Expiration of section.
90.58.550 Oil or natural gas exploration in marine waters——Definitions——Application for permit——Requirements——Review——Enforcement.
90.58.560 Oil or natural gas exploration——Violations of RCW 90.58.550——Penalty——Appeal.
90.58.900 Liberal construction——1971 ex.s. c 286.
90.58.910 Severability——1971 ex.s. c 286.
90.58.911 Severability——1983 c 138.
90.58.920 Effective date——1971 ex.s. c 286.
90.58.930 Referendum to the people——1971 ex.s. c 286——Determining if act continues in force and effect.

Marine oil pollution——Baseline study program: RCW 43.21A.405 through 43.21A.420.

RCW 90.58.010 Short title. This chapter shall be known and may be cited as the "Shoreline Management Act of 1971". [1971 ex.s. c 286 § 1.]

RCW 90.58.020 Legislative findings——State policy enunciated——Use preference. The legislature finds that the shorelines of the state are among the most valuable and fragile of its natural resources and that there is great concern throughout the state relating to their utilization, protection, restoration, and preservation. In addition it finds that ever increasing pressures of additional uses are being placed on the shorelines necessitating increased coordination in the management and development of the shorelines of the state. The legislature further finds that much of the shorelines of the state and the uplands adjacent thereto are in private ownership; that unrestricted construction on the privately owned or publicly owned shorelines of the state is not in the best public interest; and therefore, coordinated planning is necessary in order to protect the public interest associated with the shorelines of the state while, at the same time, recognizing and protecting private property rights consistent with the public interest. There is, therefor, a clear and urgent demand for a planned, rational, and concerted effort, jointly performed by federal, state, and local governments, to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines.

It is the policy of the state to provide for the management of the shorelines of the state by planning for and fostering all reasonable and appropriate uses. This policy is designed to insure the development of these shorelines in a manner which, while allowing for limited reduction of rights of the public in the navigable waters, will promote and enhance the public interest. This policy contemplates protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state and their aquatic life, while protecting generally public rights of navigation and corollary rights incidental thereto.

The legislature declares that the interest of all of the people shall be paramount in the management of shorelines of state-wide significance. The department, in adopting guidelines for shorelines of state-wide significance, and local government, in developing master programs for shorelines of state-wide significance, shall give preference to uses in the following order of preference which:

(1) Recognize and protect the state-wide interest over local interest;

(2) Preserve the natural character of the shoreline;

(3) Result in long term over short term benefit;

(4) Protect the resources and ecology of the shoreline;

(5) Increase public access to publicly owned areas of the shorelines;

(6) Increase recreational opportunities for the public in the shoreline;

(7) Provide for any other element as defined in RCW 90.58.100 deemed appropriate or necessary.

In the implementation of this policy the public's opportunity to enjoy the physical and aesthetic qualities of natural shorelines of the state shall be preserved to the greatest extent feasible consistent with the overall best interest of the state and the people generally. To this end uses shall be preferred which are consistent with control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon use of the state's shoreline. Alterations of the natural condition of the shorelines of the state, in those limited instances when authorized, shall be given priority for single family residences, ports, shoreline recreational uses including but not limited to parks, marinas, piers, and other improvements facilitating public access to shorelines of the state, industrial and commercial developments which are particularly dependent on their location on or use of the shorelines of the state and other development that will provide an opportunity for substantial numbers of the people to enjoy the shorelines of the state. Alterations of the natural condition of the shorelines and wetlands of the state shall be recognized by the department. Shorelines and wetlands of the state shall be appropriately classified and these classifications shall be revised when circumstances warrant regardless of whether the change in circumstances occurs through man-made causes or natural causes. Any areas resulting from alterations of the natural condition of the shorelines and wetlands of the state no longer meeting the definition of "shorelines of the state" shall not be subject to the provisions of chapter 90.58 RCW.

Permitted uses in the shorelines of the state shall be designed and conducted in a manner to minimize, insofar as practical, any resultant damage to the ecology and environment of the shoreline area and any interference with the public's use of the water. [1982 1st ex.s. c 13 § 1; 1971 ex.s. c 286 § 2.]

RCW 90.58.030 Definitions and concepts. As used in this chapter, unless the context otherwise requires, the following definitions and concepts apply:

(1) Administration:

(a) "Department" means the department of ecology;

(b) "Director" means the director of the department of ecology;

(c) "Local government" means any county, incorporated city, or town which contains within its boundaries any lands or waters subject to this chapter;

(d) "Person" means an individual, partnership, corporation, association, organization, cooperative, public or municipal corporation, or agency of the state or local governmental unit however designated;

(e) "Hearing board" means the shoreline hearings board established by this chapter.

(2) Geographical:

(a) "Extreme low tide" means the lowest line on the land reached by a receding tide;

(b) "Ordinary high water mark" on all lakes, streams, and tidal water is that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or the department: *Provided*, That in any area where the ordinary high water mark cannot be found, the ordinary high water mark adjoining salt water shall be the line of mean higher high tide and the ordinary high water mark adjoining fresh water shall be the line of mean high water;

(c) "Shorelines of the state" are the total of all "shorelines" and "shorelines of state-wide significance" within the state;

(d) "Shorelines" means all of the water areas of the state, including reservoirs, and their associated wetlands, together with the lands underlying them; except (i) shorelines of state-wide significance; (ii) shorelines on segments of streams upstream of a point where the mean annual flow is twenty cubic feet per second or less and the wetlands associated with such upstream segments; and (iii) shorelines on lakes less than twenty acres in size and wetlands associated with such small lakes;

(e) "Shorelines of state-wide significance" means the following shorelines of the state:

(i) The area between the ordinary high water mark and the western boundary of the state from Cape Disappointment on the south to Cape Flattery on the north, including harbors, bays, estuaries, and inlets;

COASTAL ZONE MANAGEMENT ACT OF 1972

(PL 92-583, 16 U.S.C. 1451 *et seq.*, October 27, 1972; Amended by PL 93-612, January 2, 1975; PL 94-370, July 26, 1976; PL 95-219, December 28, 1977; PL 95-372, September 18, 1978; PL 96-464, October 17, 1980; PL 98-620, November 11, 1984; PL 99-272, April 7, 1986)

SHORT TITLE

SEC. 301. This title may be cited as the "Coastal Zone Management Act of 1972".

CONGRESSIONAL FINDINGS

SEC. 302. The Congress finds that —

(a) There is a national interest in the effective management, beneficial use, protection, and development of the coastal zone.

(b) The coastal zone is rich in a variety of natural, commercial, recreational, ecological, industrial, and esthetic resources of immediate and potential value to the present and future well-being of the Nation.

(c) The increasing and competing demands upon the lands and waters of our coastal zone occasioned by population growth and economic development, including requirements for industry, commerce, residential development, recreation, extraction of mineral resources and fossil fuels, transportation and navigation, waste disposal, and harvesting of fish, shellfish, and other living marine resources, have resulted in the loss of living marine resources, wildlife, nutrient-rich areas, permanent and adverse changes to ecological systems, decreasing open space for public use, and shoreline erosion.

(d) The coastal zone, and the fish, shellfish, other living marine resources, and wildlife therein, are ecologically fragile and consequently extremely vulnerable to destruction by man's alterations.

(e) Important ecological, cultural, historic, and esthetic values in the coastal zone which are essential to the well-being of all citizens are being irretrievably damaged or lost.

[302(f) added by PL 96-464]

(f) New and expanding demands for food, energy, minerals, defense needs, recreation, waste disposal, transportation, and industrial activities in the Great Lakes, territorial sea, and Outer Continental Shelf are placing stress on these areas and are creating the need for resolution of serious conflicts among important and competing uses and values in coastal and ocean waters.

[Former 302(f)—(i) redesignated as (g)—(j) by PL 96-464]

(g) Special natural and scenic characteristics are being damaged by ill-planned development that threatens these values.

(h) In light of competing demands and the urgent need to protect and to give high priority to natural systems in the coastal zone, present state and local institutional arrangements for planning and regulating land and water uses in such areas are inadequate.

(i) The key to more effective protection and use of the land and water resources of the coastal zone is to encourage the states to exercise their full authority over the lands and waters in the coastal zone by assisting the states, in cooperation with Federal and local governments and other vitally affected interests, in developing land and water use programs for the coastal zone, including unified policies, criteria, standards, methods, and processes for dealing with land and water use decisions of more than local significance.

(j) The national objective of attaining a greater degree of energy self-sufficiency would be advanced by providing Federal financial assistance to meet state and local needs resulting from new or expanded energy activity in or affecting the coastal zone.

CONGRESSIONAL DECLARATION OF POLICY

SEC. 303. The Congress finds and declares that it is the national policy—

(1) to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations;

(2) to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and esthetic values as well as to needs for economic development, which programs should at least provide for—

(A) the protection of natural resources, including wetlands, floodplains, estuaries, beaches, dunes, barrier islands, coral reefs, and fish and wildlife and their habitat, within the coastal zone,

(B) the management of coastal development to minimize the loss of life and property caused by improper development in flood-prone, storm surge, geological hazard, and erosion-prone areas and in areas of subsidence and saltwater intrusion, and by the destruction of natural protective features such as beaches, dunes, wetlands, and barrier islands.

(C) priority consideration being given to coastal-dependent uses and orderly processes for siting major facilities related to national defense, energy, fisheries development, recreation, ports and transportation, and the location, to the maximum extent practicable, of new commercial and industrial developments in or adjacent to areas where such development already exists,

(D) public access to the coasts for recreation purposes,

(E) assistance in the redevelopment of deteriorating urban waterfronts and ports, and sensitive preservation and restoration of historic, cultural, and esthetic coastal features,

(F) the coordination and simplification of procedures in order to ensure expedited governmental decisionmaking for the management of coastal resources,

(G) continued consultation and coordination with, and the giving of adequate consideration to the views of, affected Federal agencies,

(H) the giving of timely and effective notification of, and opportunities for public and local government participation in, coastal management decisionmaking, and

(I) assistance to support comprehensive planning, conservation, and management for living marine resources, including planning for the siting of pollution control and aquaculture facilities within the coastal zone, and improved coordination between State and Federal coastal zone management agencies and State and wildlife agencies; and

(3) to encourage the preparation of special area management plans which provide for increased specificity in protecting significant natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, and improved predictability in governmental decisionmaking; and

(4) to encourage the participation and cooperation of the public, state and local governments, and interstate and other regional agencies, as well as of the Federal agencies having programs affecting the coastal zone, in carrying out the purposes of this title.

[303 revised by PL 96-464]

DEFINITIONS

SEC. 304. For the purposes of this title —

(1) The term "coastal zone" means the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. The zone extends, in Great Lakes waters, to the international boundary between the United States and Canada and, in other areas, seaward to the outer limit of the United States territorial sea. The zone extends inland from the shorelines only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters. Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers or agents.

[304(2) added by PL 96-464]

(2) The term "coastal resource of national significance" means any coastal wetland, beach, dune, barrier island, reef, estuary, or fish and wildlife habitat, if any such area is determined by a coastal state to be of substantial biological or natural storm protective value. [Former 304(2)—(16) redesignated as (3)—(17) by PL 96-464]

(3) The term "coastal waters" means (A) in the Great Lakes area, the waters within the territorial jurisdiction of the United States consisting of the Great Lakes, their connecting waters, harbors, roadsteads, and estuary-type areas such as bays, shallows, and marshes and (B) in other areas, those waters, adjacent to the shorelines, which contain a measurable quantity or percentage of sea water, including, but not limited to, sounds, bays, lagoons, bayous, ponds, and estuaries.

(4) The term "coastal state" means a state of the United States in, or bordering on, the Atlantic, Pacific, or Arctic Ocean, the Gulf of Mexico, Long Island Sound, or one or more of the Great Lakes. For the purposes of this title, the term also includes Puerto Rico, the Virgin Islands, Guam, the Commonwealth of the Northern

7. Etolin Island area Mariculture Pilot Project final report, re coastal use conflict and siting guidelines.

Alaska Coastal Zone Management Program (excerpts from statute); Alaska Coastal Zone Management Program - 1986 Annual Report (excerpts)

CONFLICTS WITH OTHER COASTAL USERS

Mariculture is a relatively new industry in Alaska and has potential to conflict with established uses. Many existing uses are dispersed over large areas while other activities likely to produce pollution are localized. These conditions provide opportunities to site mariculture facilities to avoid conflict with other users. Not all conflicts can be resolved, but most can.

Resource agencies in Alaska sometimes lack detailed information on all uses occurring in Alaska's vast coastal areas. Use patterns can be dynamic, varying dramatically in response to changes in natural conditions and government regulations. Resource agencies conduct planning and permit review processes to provide opportunities for existing and potential resource users to identify their needs.

Stringent water quality standards for growth of marketable seafood products will limit the suitability of sites to those physically located separate from areas with waste discharges. Determining acceptable separation distances will help guide any conflict resolution process and will determine areas where mariculture and other uses are incompatible.

This section will discuss major conflicts with other users of Alaska's coastal resources.

Land Management Issues

Resource agencies share responsibilities for development of new industries that depend on public resources for development. Primary land use manager for the state is the Department of Natural Resources (DNR). DNR is responsible for developing these resources while at the same time providing for resource conservation and protection.

DNR historically has been the state agency facing new industries needing access and use of state land, such as prospective barley farms, coal mines, petrochemical plants, shore based seafood processing facilities, geothermal energy developments, and cattle ranching. Developers need assurance of long term property rights to secure financing and so they don't lose control of sites in which they have made significant capital investments. DNR's responsibility is to ensure that commitment of state lands will be lawful, in the public's best interest and will produce viable new industries, useful products, stable jobs, and hopefully a fair market value.

Other resource agencies such as ADF&G and DEC review development proposals under their statutory authorities and also provide guidance to DNR for development and protection of resources in their areas of responsibility. These agencies and others share in the Alaska Coastal Management Program (ACMP) which provides for a coordinated review of all coastal development in Alaska.

Aquatic farming may become a significant long term use of state tide and submerged lands. Alaska must achieve balance in its regulatory programs which will allow this industry to thrive, while at the same time protecting existing uses of land. Problems that may occur if balance is not acheived include displacement of public uses such as recreation and fish and wildlife harvest, conflicts with other commercial uses of tide and submerged lands, land speculation, impacts on adjacent land holders, and stifling of an emerging industry.

Mariculture Development Land Use Needs

Successful mariculture developments share a number of basic requirements. Foremost among these is a need to secure appropriate sites. Desirable features of a mariculture site are also often desirable for other uses, such as anchorages. Even in rural Alaska, it is a rare mariculture site that does not also attract other users.

Resolution of use conflict usually involves two approaches:

1. Separating uses geographically. Competing uses can often be separated to avoid conflicts.

2. Mitigating measures, such as site design, timing restrictions on use, or access corridor stipulations may allow more than one use of a site and resolve conflict.

Unfortunately, not all conflicts can be resolved to allow multiple use of the same site. It is then the land managers responsibility to determine best use of state lands. Such conflicts are more likely to occur in areas not covered by an appropriate land use plan. Experience has been, however, that many conflicts can be resolved using the State's coastal management program project consistency review system. This system has been developed and refined by state agencies over many years of permit review and conflict resolution.

Displacement of Public Use

Structures on tidelands can physically displace or obstruct other uses requiring surface access. Mariculturists sometimes apply for use of areas larger than the physical dimensions of proposed structures (see Table 3-3) to minimize impacts to their operations from other human activities. Physical displacement can exist for farm site as well as for upland facilities. This may affect an even larger area if other human activities require a degree of solitude.

Culture technique is one variable determining if displacement will occur, and the magnitude of physical displacement. Bottom culture and submerged structures have least impact on natural resource harvest, boating and on aesthetic enjoyment, but may displace fish and wildlife harvests of bottom dwelling species such as crab and clams.

Both longlines and rafts can interfere with recreational and commercial harvest activities. While longlines require only surface floats, in contrast to log boom structures commonly used as rafts, very extensive longline grids are used in other countries such as Japan (see Table 3-4).

Floating culture of shellfish and seaweed are commonly kept separate through negotiation in other countries. Japanese, fishing cooperatives allocate uses, prohibiting fishing boats and nets in areas of seaweed culture, (Olson, 1987) and prohibiting suspended culture in nearshore areas where fishing rights are maintained over bottom culture areas (Ito et. al., 1975).

Aesthetic conflicts are less tangible than physical displacement. Longlines may be less objectionable than rafts in terms of their visibility, however some people object to floating structures in front of recreational homes or cabins, and to associated activities and noise resulting from mariculture operations. Aesthetic objections from recreational home owners have been an issue in New Zealand (Dias 1984), in Washington (Freeman, 1985; E. Hurlburt, pers. comm., 1988), and in British Columbia (Butler, 1986).

Recreation

Expectations and desires for seclusion when recreating in rural Alaska is highly valued by residents and visitors. A mariculture facility, particularly with caretaker facilities located in a smaller cove, will essentially eliminate that sense of seclusion for recreation users. Those recreation users tend to find other secluded and aesthetically pleasing areas. Coastal resources may receive competing uses in many areas. Degree and intensity of recreation pursuits are difficult to define and may be dynamic in nature. Rural coastal areas receive dispersed recreation activities by small groups or individuals at widespread and diverse sites.

Mariculture development has the potential to block or inhibit public access to coastal recreation areas. The ACMP recreation standard requires state agencies to give high priority to maintaining public access to coastal waters. Mariculture operations that would form a barrier between coastal waters and shorelines, or that would prohibit access to important costal areas, could be found inconsistent with ACMP requirements.

Anchorages

Potential conflicts exist between anchorages and mariculture development. Mariculture sites need room for floats, rafts and other waterborne structures. They also need pristine waters free from high coliform counts and other forms of pollutants. Some organisms and growing facilities are adversely affected by waves from boat wakes.

Boats need room to maneuver and anchor. Some boats inadvertently discharge waste products into water. Some boat operators may ignore sound waste management procedures and choose to discharge contaminants at will. Not all boat harbors in Southeast Alaska have adequate holding tank pumping stations available making it difficult for even conscientious boaters to comply.

Raw sewage means contamination of marine organisms by coliforms. Waste products such as chlorine used by some boats to flush sewage tanks and bilges are highly toxic to mariculture organisms. Heavy metals associated with fuel and oil wastes are readily absorbed and held by many species of sea vegetables.

Current information indicates large, heavily used anchorages, or small, strategically located anchorages and mariculture facilities are incompatible. Sewage, chlorine from sewage systems, diesel, oils or other waste products discharged from boats near a mariculture facility may result in unacceptably high coliform counts or other forms of pollution. Infrequent boat activity, that does not discharge harmful products into the water is not a major problem.

This situation could be improved by the compliance by all boats holding sewage and waste products for acceptable disposal. Development of dumping facilities in more commercial harbors may also help to alleviate sewage problems.

Proposals for mariculture sites proposed in known anchorages should include alternate anchorages nearby. High use anchorages with no nearby alternative anchorages will have difficulty being permitted or leased for mariculture sites. Smaller, secondary anchorages with alternate anchorages nearby will probably be more successful in obtaining necessary authorizations.

Mitigating measures for this conflict usually means locating the two facilities far enough apart so there is no conflict. Another potential mitigating measure might be adoption of a "relay" system. Under this system shellfish are taken from contaminated or polluted areas to noncontaminated waters. Shellfish are held for a minimum of two weeks to cleanse themselves. Testing indicates when the acceptable product is released for sale. Actual time for this cleansing process may be considerably more than two weeks.

Relaying has not been tried in Alaska. It may require substantial handling and facilities that would add to the cost of products. Further testing would be needed if this system is considered.

Fish and Wildlife Harvest

Recently passed legislation requires that regulations must provide for the consideration of upland management policies and whether the proposed use of a site is compatible with the traditional and existing uses of the area in which the site is located. Both longline and raft culture techniques involve structures that can interfere with commercial and noncommercial harvest of fish and wildlife. Longlines require only floats on the surface, in contrast to log boom structures commonly used as rafts. Extensive longline grids are in use in other countries. (See table 3-4)

Conflicts between mariculture structures and other uses depend partly on if the farmer needs to restrict boat traffic. For example, farmers may wish to limit boat traffic to minimize potential for vandalism and pollution from fuel and sewage. Conversely, personal use crab fisheries may be very productive around rafts used for culturing sea organisms.

Because communities that use the study area are currently considered subsistence communities, subsistence harvests are important activities in most areas where aquatic farming may occur. Conflicts between mariculturists and subsistence users could occur as more facilities are developed. Development of direct competition for subsistence resources may increase as new residents enter rural areas. Loss of subsistence opportunities could occur if mariculture facilities are placed in important subsistence resource areas.

Results of a subsistence study currently being conducted by ADF&G, Division of Subsistence will be helpful in identifying potential conflicts.

Conflicts with Other Commercial Uses of Tidelands and Submerged Lands

The best sites for aquatic farm facilities may often be the best sites for other uses such as mineral or timber transfer and support facilities, log storage, commercial fishing grounds, anchorages, or commercial recreation development. Although mariculture is a new industry in Alaska, some conflicts have surfaced in Kodiak, Prince William Sound, and Southeast. Besides need for space, water quality standards for mariculture may preclude use of favored sites for other commercial or industrial facilities. Forcing more stringent mitigation measures or alternative siting for timber, mineral transfer, or tailings disposal could reduce or eliminate economic viability of resource extraction industries in a given area.

Conversely, mineral or timber transfer sites, log storage sites, and floating camps associated with resource development activities may limit space available or degrade water quality for mariculture facilities, making mariculture development more difficult and less likely.

Commercial Fishing

In the study area, commercial fishing seldom occurs in secluded coves and bays that are more commonly suitable for mariculture. Nevertheless, these protected coves may be important to the commercial fishing fleet because they provide safe anchorages close to fishing grounds or tenders.

Potential conflicts may develop due to fishing hook-off points. These are locations near shore where commercial fishing nets are set for harvest of fish. Hook-off points can occur virtually anywhere along shorelines free of rocks or other obstacles that would tangle nets. Some hook-off points are valuable sites for fishing boats as fish migration patterns bring them to the same area year after year. Culture techniques utilized by mariculture operations that restrict use of open shorelines have the potential to conflict with hook-off points.

Conflicts may be limited to those times of year fish harvest occurs. Separation of uses may be the only practical solution to this type of conflict.

Commercial Recreation

Commercial recreation in the form of hunting, fishing, and guiding, or the establishment of recreation lodges have potential for conflict with mariculture development. Aside from potential physical displacement, such recreation development could provide sources of point pollution.

Type and degree of conflict can only be determined on a case by case basis.

Logging

Conflicts with timber harvest operations may occur because floating facilities can interfere with log transfer and floating storage operations. In the study area, timber harvest on Forest Service lands is continuing, and operations require log transfer at tidewater, storage of log rafts in protected bays and inlets, and towing rafts to mills. Conflicts may arise because of: 1) the overlap of many siting and operational requirements for log transfer and storage and for mariculture, particularly a requirement for protected waters, and 2) the potential for degradation of water quality in the vicinity of log transfer facilities.

Log transfer and storage area siting involves a detailed review of potential environmental impacts and conflicts with other uses. Suitable sites which meet environmental and industry criteria are generally limited in number. Unless mariculture, log transfer and storage can coexist, there may be direct competition for sites.

Bark and other organic debris resulting from log transfer and storage can have adverse impacts similar in nature to those associated with floating mariculture facilities (Pacific Northwest Pollution Control Council, 1971; Pease, 1974; Schultz and Berg, 1976; Duval and Slaney Co., 1980). Anaerobic sediments can form and hydrogen sulphide may be released. Freese and O'Clair (1984) documented a relationship between low dissolved oxygen concentrations, high hydrogen sulphide and ammonia concentrations, and mortality in mussels and littleneck clams exposed to decomposing wood wastes under laboratory conditions. Decomposition of log wastes can also release leachates which are toxic to some species of shellfish (Buchanan et al., 1976).

Close proximity of log transfer facilies and floating mariculture facilities in small or poorly flushed waterbodies could result in contamination, disease, or mortality of cultured animals. Bottom culture should be precluded in areas where large quantities of bark could potentially be deposited. Intertidal storage and upland support facilities should be located to minimize potential problems.

Other types of water quality conflicts may also occur. Use of pesticides at dry land log storage sites has been proposed in Alaska (e.g., the use of lindane mixed in diesel oil to control ambrosia beetle at Thorne Bay in 1983). These substances can bio-accumulate in shellfish. Requirements for boat and seaplane traffic for timber harvest and transfer operations also increase the potential for hydrocarbon pollution. Sewage discharge from logging facilities would be of concern as a possible point source of pollution. Logs are sometimes lost and floating debris could damage mariculture structures.

No known mitigating measures exist that could increase compatibility. Distances between TTF's and mariculture sites are determined largely on a case by case basis due to currents and other physical characteristics of the area in question.

Mining

Potential conflicts in the form of direct competition for suitable sites for mineral transfer and mariculture are similar in nature as those between mariculture and logging activities. Remote hardrock mine sites require upland facilities for processing ore, transfer facility operations, and for loading barges transporting ore to markets. Options for siting mariculture facilities in close proximity to mine sites are limited. Water quality impacts can result from mining operations. Disposal of tailings in marine waters that contain high concentrations of heavy metals or result in high levels of turbidity and suspended sediments are inherent conflicts. The potential for water pollution from sewage discharge, boat fuel hydrocarbons, and waste oil is similar to that for logging support facilities and operations.

Urban Development

Industrial and commercial development of shorelines may conflict with requirements of mariculture developments through physical competition for space or through a variety of pollution sources. Degree and type of impact is site specific.

The U.S. Forest Service manages most lands in the study area. No urban development is planned at this time.

Residential Development

Residential development along shorelines or floathomes can compete for physical space with mariculture facilities. Residential development can also result in point source discharge of sewage. Shoreline residents can object to mariculture on aesthetic grounds. One subdivision, Olive Cove, exists in the study area with both private and state ownership. Conflicts between mariculture facilities and residential development may be minimal. However, public and agency review should address these potential concerns if mariculture development is proposed in this area.

Historic or Archeological Sites

Upland development associated with mariculture is not compatible with historic or archeological sites. By law, these sites must not be affected or, as a last resort, extensive mitigation is required to identify and record values before impact occurs.

Because of limited surveys of variable intensity, all historical and archeological sites have not been located within the study area. Location of known sites will not be provided in an attempt to prevent vandalism.

If a U.S. Forest Service Special Use Permit is required, applicants must initiate a site survey by a qualified archeologist. The Special Use Permit will normally be denied when historic or archeological values are found on or adjacent to the requested site. State permits may similarly require extensive mitigation or be subject to denial on these grounds.

Land Speculation

Prior to 1986, British Columbia experienced a dramatic rush for permits which allowed the holder to enter and occupy a site to conduct research for up to one year. It appears that these permits were being issued for large areas of land with little regard for potential impacts to the public. A gold rush image was created resulting in a great deal of public concern, and subsequently a moratorium was imposed. Alaska does not have an investigative permit similar to this permit but we could experience land speculation in other forms, most notably by applying for permits and leases to tie up a site.

Land speculation in this case is described as obtaining land use rights with the intent of not using the land for proposed uses but selling or trading those rights for a profit. This problem is not unique to mariculture and can occur in any use of state land. Speculation can be greatly reduced by close monitoring of development schedules and writing conditions in land use documents that would allow agencies to revoke permits or leases if the development is not proceeding as proposed.

Impacts on Adjacent Land Owners

Mariculture can impact adjacent land owners in a variety of ways: loss of tidelands access or boat moorage, loss of view, noise, loss of privacy, loss of habitat, and changes in water quality. This has been a significant issue in Washington and British Columbia, and may become a concern in Alaska.

Adjacent land owners have a number of ways to participate in mariculture facility siting. They can participate in development of state land use plans, coastal zone management programs, and local comprehensive plans. Adjacent owners are notified by mail of pending applications and are given an opportunity to comment on projects. A 30 day public notice pursuant to AS 38.05.945 is required for leases. Local governments, regional or village native corporations, local coastal districts, and communities are also notified. Local government or regional native corporations may hold public hearings if necessary. Department of Natural Resources reviews all of these comments and weighs the use and enjoyment of the adjacent owner against what is considered to be state's best interest.

Land use conflicts on uplands are adjudicated in the study area by Forest Service officials utilizing the Tongass Land Management Plan.

Upland Access

Access is a major consideration under current permit and lease review processes. A part of the state's "best interest" determination is an evaluation of impacts on access, especially to upland owners. Access is important for recreation and fish and wildlife harvest on public lands. Access by water craft, aircraft and in some circumstances by land vehicle can occur.

In most circumstances, access problems can be mitigated on a mariculture site by specification of easements or access corridors on permits or leases. In some circumstances there is not sufficient room to separate two uses. In these cases access may be allowed over other forms of development if a reasonable alternative cannot be found.

U.S. Forest Service as Upland Managers

As primary managers of uplands in the study area, the U.S. Forest Service has the responsibility of management of upland permits for mariculture development. Land use designation (LUD) I, II, III, and IV of Tongass Land Management Plan provides guidance for development in Tongass National Forest.

Following is a brief description of the four major land use designations for Forest Service lands:

LUD I (and LUD I Release Areas) - This designation is primarily a wilderness designation. It provides for minimal development compatible with maintenance of natural character of land.

LUD II - This designation is managed in a roadless state to retain its wildland character but would permit wildlife and fish habitat improvement and primitive recreational development. (The study area contains no LUD II lands)

LUD III - This land is managed for a variety of uses. Emphasis is on managing for uses and activities in a compatible and complementary manner to provide the greatest combination of benefits. These areas have either high use or high amenity values in conjunction with high commodity values.

LUD IV - This area will be managed to provide opportunities for intensive resource use and development where emphasis is primarily on commodity or market resources.

The southern half of Etolin Island is currently designated as LUD I Release. These lands are being managed to provide opportunities for solitude and primitive types of recreation in unaltered environment.

Components of mariculture projects occurring above mean high tide line must be compatible with the goals of the LUD classifications. Development in LUD IV areas is more acceptable than within the LUD I Release area. Development in all LUD areas will be restricted to structures specifically designed to blend into surrounding landscape. Size, location, and color of structures and the amount of trees to be removed will be specified by the Forest Service for development in all LUD's. Although goals for TLMP do not apply to the waters below mean high tide the U.S. Forest Service expects permitted activities on water adjacent to the Forest will be compatible with management direction for surrounding uplands.

There is currently one Special Use Permit for an upland facility to support mariculture development in the LUD I Release area. No more permits will be issued unless the designation changes to LUD II, III, or IV.

The U.S. Forest Service is presently revising its land management plan for the Tongass National Forest including the Etolin Island area. Specific direction on how the resources on Etolin Island will be managed will appear in the plan. Until the revision is completed current Tongass Land Management Plan direction and guidelines will apply to mariculture developments.

Cumulative Effects of Expanding Tidelands Use

For most of coastal Alaska, mariculture facilities are permitted on an individual basis. Impact from one or two farms may be minimal, but cumulative effects of numerous farms on existing uses may be dramatic. DNR management and area plans provide a process for resolving use conflicts on a regional basis, and best interest findings required under AS 38.05.035(e) provide mechanisms for resolving conflicts on individual permits/leases. The ACMP consistency review process also provides a mechanism for resolving conflicts regarding use of state tide and submerged lands.

Although a regional perspective is preferred, cost of management and area plans limits their use as a routine method of sorting out problems and resolving conflicts. Lack of a regional perspective could lead to significant conflicts over time and is a major problem with the existing process.

During development of statewide guidelines, Alaska could evaluate British Columbia experience during its initiation to finfish aquaculture. Immediate needs for coastal planning occurred when it became apparant that a loss of access, a loss of anchorages, impacts on upland owners, impacts on recreation, and tourism. British Columbia placed a moratorium on leases and licenses for finfish farming and began an inquiry into finfish aquaculture and its impacts. Inquiries were completed in 1986. How well their conclusions or recommendations apply to Alaska conditions is uncertain.

Summary

While numbers of potential problems are large, it appears most land use problems associated with mariculture can be resolved. Appropriate land use plans and permit review processes, such as ACMP consistency determinations, are useful to resource agencies to accomplish resolution of conflict. Developing comprehensive area plans is desirable but time consuming (2-3 years) and expensive. Refined policies and regulations are being developed from newer and more accurate information by all resource and review agencies. This will greatly assist land management agencies in resolving conflicts among coastal users.

GUIDELINES AND MITIGATING MEASURES

Relative Measures of Suitability

In developing a mariculture facility several factors need to be considered: 1) if the site is capable of commercial production, 2) if the site is able to meet requirements of facility design, and 3) if the development is an acceptable use of public land and water.

Interactions between factors are complex, and may fluctuate from season to season or from year to year. The economic environment may support development, or can contribute to failures. Other uses sometimes compete for limited resources.

The following discussions are presented to assist agencies or individuals in determining the suitability of a site for select species of shellfish or kelp. It is unlikely any single site will be the "million dollar" site in all respects. Therefore, these indicators will be helpful in estimating the relative suitability of mariculture sites.

Guidelines for Siting Shellfish and Sea Vegetable Mariculture Facilities and Mitigating Impacts

"Mitigation" is the process of avoiding or minimizing adverse impacts. Proper siting of shellfish and seaweed mariculture facilities should result in avoiding the majority of adverse impacts that might otherwise occur.

Conflict over mariculture siting has resulted in development of siting criteria and zoning in both Washington and British Columbia. In both areas, conflict has primarily been over finfish net pen siting. However, guidelines developed are in use for "all aquaculture proposals involving floating structures and improvements" in British Columbia (B.C. Ministry of Forestry and Lands 1987).

Proposed siting guidelines are based on a review of interim guidelines for management of salmon net pen culture in Puget Sound (Science Applications International Corporation 1986), on draft guidelines for development and operation of aquaculture and fish processing facilities (Department of Fisheries and Oceans Canada, Pacific Region 1986 a,b), and on siting guidelines developed by ADF&G for other forms of coastal development and by DNR for area plans.

Guidelines proposed here are based on several assumptions: 1) mariculture in the near future will be similar to that currently practiced (i.e., floating structures will be used, but bottom culture techniques may be proposed), 2) regardless of culture technique used, exclusive use of areas will be desired by farmers, 3) sites require expansion potential, 4) farms require potential for access to and use of adjacent uplands for support facilities and use of intertidal zone and beach above high tide for beaching gear, and storing or hardening shellfish. Some criteria are in conflict (e.g., increasing stocking density to reduce areal extent to minimize user conflicts vs. decreasing stocking density and increasing areal extent to minimize sedimentation impacts). Applicability of each guideline will depend on specific sites and proposal under review but they are included in this report as guidelines to both prospective sea farmer and to project reviewers.

Fish and wildlife concentration areas and human use areas described have been mapped as part of this project for the Etolin Island area.

Guidelines are organized into three phases: 1) siting, 2) project design, and 3) operations. If sites can be selected which avoid areas described under Siting Guidelines, then measures described in subsequent sections to mitigate impacts through design or operation may be unnecessary.

Siting Guidelines

1. To minimize adverse impacts on productive benthic habitats:

1a - Conduct a site survey to determine flushing regime, benthic community composition, and baseline water quality (i.e., dissolved oxygen levels, presence of toxicants or contaminants).

1b - Site floating facilities and intertidal structures where currents are strong enough to disperse suspended organics and organic deposits. Avoid siting in small embayments with sills, natural restrictions to tidal exchange, or existing water quality problems.

1c - Site floating facilities or structures embedded in the substrate in areas with least productive benthic habitat. Avoid shallow areas (less than 40 feet deep at Mean Lower Low Water).

1d - Because bottom culture site requirements are likely to conflict with maintenance of existing productive benthic communities, detailed site analysis including a dive survey should occur prior to siting. Bottom culture requirements should be defined. Information on the existing benthic community, proposed methods of reducing or eliminating predation, stocking rates, and potential effects on competing species should be provided. Feasibility of culture in alternative sites which have lower benthic productivity should be evaluated.

1e - Avoid siting within 300 feet of herring spawning areas, hard shell clam concentration areas, and eelgrass and kelp beds. Avoid siting sea vegetables farms within 300 feet of herring spawning areas and eelgrass beds.

1f - Select least productive intertidal or upland areas for activities involving dredging, fill, significant compaction of vegetation and sediments (e.g., filling or mechanized access), or flow alterations. Avoid use of equipment in productive habitat, particularly tideflats and salt marshes.

1g - Do not allow floating structures to ground at any tidal stage, except for planned beaching of gear for cleaning or fouling control. Beach gear in the intertidal area or beach area of lowest biological productivity. Sand or gravel beaches are the preferred sites; avoid tideflats adjacent to streams and salt marshes.

2. To avoid disturbance of sensitive fish or wildlife species or species during sensitive life history stages:

2a - Avoid siting within 330 feet or within a distance determined by the U.S. Fish and Wildlife Service of bald eagle nests.

2b - Avoid siting within a 300 foot radius of mouths of anadromous fish streams at Mean Lower Low Water.

2c - Avoid siting within one mile of: 1) harbor seal haul out concentration areas or pupping areas, 2) sea otter concentration areas, pupping areas, or feeding areas, and 3) seabird colonies.

2d - Avoid siting within waterfowl and shorebird seasonal concentration areas.

These guideline distances can be modified on a site specific basis if other measures will mitigate the disturbance or if disturbance is determined to be insignificant.

3. To minimize the effect of creating an attractive nuisance to potential predators or scavengers:

3a - Determine bird or mammal species which are expected to be a predator on the cultured species. Guideline distances for separation from concentration areas to avoid disturbance (#2 above) should be used as criteria if the species is a potential predator. Distance of separation between rearing facilities and predator concentrations can be modified on a site specific basis if other measures will be implemented to minimize predation.

3b - Avoid siting mariculture facilities, including upland support facilities, adjacent to brown and black bear concentration areas.

3c - Avoid siting shellfish farms within areas where diving ducks, particularly scoters and goldeneyes, concentrate seasonally. Rafts or longlines may be sited within 1 mile of concentration areas if they can be sited in waters deeper than the birds traditionally feed on shellfish beds.

3d - Avoid siting shellfish farms within one mile of sea otter concentration areas.

4. To minimize conflicts with and displacement of traditional commercial and noncommercial users of fish and wildlife:

4a - Avoid siting in or adjacent to:

- Intensive commercial crab fishing areas
- Intensive commercial shrimp fishing areas (pot, trawl)
- Intensive commercial clam harvest areas (e.g., geoducks)
- Intensive commercial abalone harvest areas
- Intensive hunting areas (waterfowl)
- Intensive noncommercial fish and wildlife harvest areas
- Intensive anchorages within day use areas of major communities for sportfishing and other anchorages of local or regional importance
- Intensive float plane access areas
- Areas of restricted navigation

["Intensive Use" will have to be determined on a case-by-case basis. Generally, ADF&G conducts an assessment of the importance of a particular harvest area during permit reviews. The public will also have an opportunity to comment. Due to the variety of uses and lack of data, it is difficult to set specific thresholds. Intensive uses identified here have been identified as ones likely to constitute a conflict in specific situations.]

5. To minimize interference with fisheries enhancement activities:

5a - Avoid siting facilities adjacent to hatcheries or within terminal harvest areas.

6. To avoid adverse impacts relating to water quality:

6a - Applicants should gather site specific information on possible contamination sources, and avoid siting facilities in areas with waste discharges. (e.g., sewage, mine tailings, boat use, etc.)

6b - Applicants should gather site specific information on water characteristics to ensure that adequate water quality can be maintained once culture operations commence. (e.g. salinity, tidal flushing, currents, depths, temperature, etc.)

6c - Applicants should gather site specific information on levels of PSP which may occur naturally in the area, both in native shellfish and bottom sediments.

7. DNR Land use permit/lease guidelines:

7a - Mariculture and competing uses. Mariculture may be allowed on state tidelands where there is no significant conflict and if the proposal is not in conflict with other guidelines. Siting of mariculture facilities may be more difficult on tidelands used for, or designated in area plans for use by, log transfer or storage, mineral transfer or access, and commercial activities. Approvals to locate mariculture facilities adjacent to existing or planned land sales, in crucial fish and wildlife habitat areas, developed recreation areas, and areas used intensively for harvest of fish and wildlife or for anchorage will also be more difficult to obtain.

Consistent with other guidelines, these areas will be available for mariculture: 1) if land mangers determine it is possible to site, design, and operate the two or more uses compatibly in the area, or 2) there is no feasible and prudent alternative for mariculture while one does exist for competing use. In no case will mariculture be allowed to foreclose access to mineral, timber, or recreation resources unless feasible or prudent alternative access exists. However, in some cases it may be in public interest to concentrate uses in one bay rather than allowing proliferation of uses in many bays.

7b - Upland owner support for mariculture. Upland owners are encouraged to identify areas where mariculture (including upland facilities) should and should not be developed and to communicate their conclusions to DNR and to the mariculture industry. Tideland development for mariculture should not conflict with management goals of adjacent uplands as provided by approved plans or policy of the managing agency.

7c - Mariculture caretaker facilities. Floating caretaker facilities for mariculture operations may be allowed. Floating caretaker facilities for mariculture operations will not be allowed in designated recreation or personal use areas unless a determination is made there is no feasible or prudent alternative. Determination will be made available for public comment.

7d - U.S. Coast Guard approval. Permits or leases will not be given until U.S. Coast Guard has certified that proposed facilities will not be a significant navigational hazard.

Project Design Guidelines

8. To minimize adverse impacts on productive benthic habitats:

8a - Increase distance of floating structures from shore to avoid shallow, productive habitats.

8b - In areas where potential for adverse impacts from organic sedimentation is high, minimize density of stocking and increase areal extent.

8c - Use flexible floating structures to minimize dampening action on waves and current flows (i.e., break water effects) to maintain natural circulation patterns.

9. To minimize adverse impacts of disease or toxicants on natural stocks:

9a - Avoid use of creosoted logs and pilings in structures.

9b - Avoid use of anti-fouling chemicals.

10. To minimize adverse impacts on predators or species sensitive to disturbance:

10a - Use nonlethal means of predator control.

10b - Use netting or other materials such as plywood to cover culture structures to provide a physical barrier to potential bird, mammal, and invertebrate predators.

10c - To minimize predation by waterfowl, waterbirds, and birds of prey, aquaculture operations should be covered with plywood or netting that has a mesh size small enough to prevent birds from penetrating it and is made of a gauge heavy enough to be visible to birds and to prevent them from becoming entangled in it. This guideline applies to nets used for both above water and underwater protection.

10d - Plywood or mesh covers on rearing structures should be employed to minimize attraction of bears.

10e - To prevent access by predators, use heavy gauge nets to prevent access.

10f - Operations should be designed and managed to minimize attraction of furbearers. If netting is employed, it should be of a mesh size small enough to prevent entrance and made of a gauge or material that cannot be chewed or clawed apart. Sheet metal collars should be placed on cables, boom sticks, and stiff legs attached to shore to minimize furbearer predation.

11. To minimize adverse impacts on other coastal users:

11a - The culture technique chosen can mitigate impacts on other users of the area if other users are not excluded from access to the area. Bottom culture avoids impacts to many commercial and noncommercial users of fish and wildlife resources, however harvest of bottom dwelling species may be displaced or precluded. Floating facilities are preferable to structures embedded in intertidal area. Longline culture facilities can be designed to be less visible than raft facilities, however low visibility can create navigation hazards. Longlines, by their nature, are more able to withstand rougher sea conditions than standard construction rafts and are suitable in areas of deeper water. Use of longlines provides greater siting flexibility to avoid sensitive areas or use conflicts, and may, in some cases, be a feasible and prudent alternatives to raft culture.

11b - Reduce areal extent of floating facilities to minimum size needed in areas where conflicting uses occur. Consider increasing stocking densities as a means to minimize areal extent.

11c - Provide navigation lanes or access easements through facilities.

11d - Increase distance of floating structures from shore to minimize use conflicts.

11e - Lower floating structures (e.g. nets, longlines) in the water column to avoid conflicts with navigation and recreational use of the area.

Comment: Lowering cultures, either temporarily or permanently within a range of 12 meters below the surface has also been recommended to avoid sets of fouling organisms, high surface water temperatures, rocking of scallops, and unstable salinity and temperature conditions. Growth may be reduced under these conditions, but disastrous events may also be avoided.

11f - Design size, color, and height of structures for low visibility where desirable to minimize impacts to aesthetics and where navigational hazards will not be created. Design high visibility marking devices (e.g., lighted buoys) where necessary for safe navigation.

11g - Consolidate facilities to minimize impacts on other users. However, establish separation distances between farms to minimize cumulative impacts on water quality and potential for disease transmission.

11h - Development plans. A site plan and other relevant information is requested on the Consolidated Shellfish Farm Application. An additional development plan will not usually be required. The preferred approach is for the site plan and other information to constitute a development plan to serve (at a minimum) as basis for DNR, ADF&G, DEC, ACMP, and upland owner review.

12. Upland facility sewage disposal.

12a - A sewage disposal system adequate to protect nearby shellfish from contamination will be required for any caretaker facilities associated with a mariculture operation.

Operational Guidelines

13. To minimize adverse impacts on productive benthic habitats:

13a - Set poles and anchors carefully during periods of lowest productivity.

13b - If structures (e.g., nets) are periodically removed, leave poles and anchors in place.

13c - Monitor sediment build up and impacts on substrate/water chemistry. Adjust stocking rates, remove organic deposits, or move facility if anaerobic substrate conditions are unavoidable.

13d - If herring spawn on structures, leave them in water until the spawn hatches.

14. To minimize adverse impacts on predator populations or species sensitive to disturbance:

14a - Use nonlethal predator control measures.

14b - Use nonlethal means of fouling control.

14c - Garbage should be kept to a minimum and incinerated daily. Food should be handled to prevent its odor from attracting bears and stored in bear proof containers. Disposal of shellfish by products or dead animals should be done in such a way as to minimize attraction of bears in a site approved by DEC.

14d - Remove structures during periods of conflict with species sensitive to disturbance.

Comment: This measure was identified as a mitigating measure for Nori farms in Washington (Washington DNR 1987). In a programmatic Federal Environmental Impact Statement, they identified the following mitigative measures: 1) removing all rafts when not in use for a period of one month for production, 2) removing nets not actively used for production, 3) removing nets during herring spawning season if overspawn of herring outside traditional areas was anticipated, 4) removing nets and structures in less than 10 feet of water depth between March 15 until June 15 every year to prevent impacts on juvenile salmon migration.

15. To minimize the impacts of disease, toxicants, or genetic changes on natural stocks:

15a - In the case of disease outbreaks, notify Alaska Department of Fish and Game and follow existing procedures for control of disease. Use of chemicals and disposal of diseased plants or animals must be approved by DEC.

15b - No exotic species of plants or animals can be imported without approval by Alaska Department of Fish and Game. (by law)

15c - Plants and animals shall not be transported between culture areas or from the wild to a culture situation without approval by Alaska Department of Fish and Game. (by law)

16. To minimize adverse impacts to other users:

16a - Remove structures (e.g., Nori nets) during periods of conflict with other fisheries.

16b - Restrict hours or periods of operation to daytime hours if necessary.

17 - Performance standards

DNR will attach reasonable performance standards to permits or leases for project development and operation. Performance standards are to ensure permitted area is used for the approved activity, the proposal is economically viable, and the permit or lease is not held for speculation or removal of a land base from competition. In all cases approved development plans must be adhered to. If the performance standards are not met, the permit or lease may be revoked.

Sec. 46.40.020. Objectives. The Alaska coastal management program shall be consistent with the following objectives:

(1) the use, management, restoration and enhancement of the overall quality of the coastal environment;

(2) the development of industrial or commercial enterprises which are consistent with the social, cultural, historic, economic and environmental interests of the people of the state;

(3) the orderly, balanced utilization and protection of the resources of the coastal area consistent with sound conservation and sustained yield principles;

(4) the management of coastal land and water uses in such a manner that, generally, those uses which are economically or physically dependent on a coastal location are given higher priority when compared to uses which do not economically or physically require a coastal location;

(5) the protection and management of significant historic, cultural, natural and aesthetic values and natural systems or processes within the coastal area;

(6) the prevention of damage to or degradation of land and water reserved for their natural values as a result of inconsistent land or water usages adjacent to that land;

(7) the recognition of the need for a continuing supply of energy to meet the requirements of the state and the contribution of a share of the state's resources to meet national energy needs; and

(8) the full and fair evaluation of all demands on the land and water in the coastal area. (§ 4 ch 84 SLA 1977)

Stated in Hammond v. North Slope Borough, Sup. Ct. Op. No. 2499 (File No. 5550, 5558), 645 P.2d 750 (1982).

Sec. 46.40.030. Development of district coastal management programs. Coastal resource districts shall develop and adopt district coastal management programs in accordance with the provisions of this chapter. The program adopted by a coastal resource district shall be based upon a municipality's existing comprehensive plan or a new comprehensive resource use plan or comprehensive statement of needs, policies, objectives and standards governing the use of resources within the coastal area of the district. The program shall be consistent with the guidelines and standards adopted by the council under AS 46.40.040 and shall include:

(1) a delineation within the district of the boundaries of the coastal area subject to the district coastal management program;

(2) a statement, list, or definition of the land and water uses and activities subject to the district coastal management program;

(3) a statement of policies to be applied to the land and water uses subject to the district coastal management program;

(4) regulations, as appropriate, to be applied to the land and water uses subject to the district coastal management program;

(5) a description of the uses and activities which will be considered proper and the uses and activities which will be considered improper with respect to the land and water within the coastal area;

(6) a summary or statement of the policies which will be applied and the procedures which will be used to determine whether specific proposals for land or water uses or activities shall be allowed; and

(7) a designation of, and the policies which will be applied to the use of, areas within the coastal resource district which merit special attention. (§ 4 ch 84 SLA 1977)

Opinions of attorney general. — The adoption of forest practices regulations by the Department of Natural Resources in 11 AAC 95 has completely preempted the coastal policy council's regulations, 6 AAC 80.100, in regulating timber harvest and processing in the coastal area. April 20, 1981, Op. Att'y Gen.

The allocation of responsibility for administration of the forest practices regulations in coastal management consistency determinations is sufficiently unclear that it seems appropriate for resolution by the adoption of regulations since differing policy considerations emphasized in the Forest Practices Act, the Coastal Management Act, and proposed permit reform regulations will be served to a greater or lesser extent by assigning responsibility for interpreting and applying the forest practices regulations to more than one agency and since a particular result is not compelled under the various pieces of authorizing legislation. April 20, 1981, Op. Att'y Gen.

Stated in Hammond v. North Slope Borough, Sup. Ct. Op. No. 2499 (File No. 5550, 5558), 645 P.2d 750 (1982).

Sec. 46.40.040. Duties of the Alaska Coastal Policy Council. Through the public hearing process and the recording of the minutes of the hearings, the Alaska Coastal Policy Council shall

(1) by regulation, adopt under the provisions of the Administrative Procedure Act (AS 44.62) not later than April 15, 1978, for the use of and application by coastal resource districts and state agencies for carrying out their responsibilities under this chapter; guidelines and standards for

(A) identifying the boundaries of the coastal area subject to the district coastal management program;

(B) determining the land and water uses and activities subject to the district coastal management program;

(C) developing policies applicable to the land and water uses subject to the district coastal management program;

(D) developing regulations applicable to the land and water uses subject to the district coastal management program;

(E) developing policies and procedures to determine whether specific proposals for the land and water uses or activities subject to the district coastal management program shall be allowed;

(F) designating and developing policies for the use of areas of the coast which merit special attention; and

(G) measuring the progress of a coastal resource district in meeting its responsibilities under this chapter;

(2) develop and maintain a program of technical and financial assistance to aid coastal resource districts in the development and implementation of district coastal management programs;

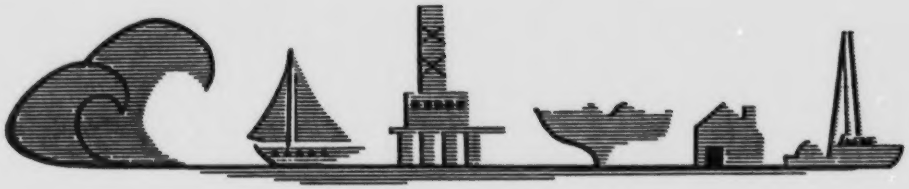
(3) undertake review and approval of district coastal management programs in accordance with this chapter;

(4) initiate a process for identifying and managing uses of state concern within specific areas of the coast;

(5) develop procedures or guidelines for consultation and coordination with federal agencies managing land or conducting activities potentially affecting the coastal area of the state. (§ 4 ch 84 SLA 1977; am § 1 ch 129 SLA 1978)

Alaska Coastal Management Program

1986
Annual Report



State of Alaska
Office of the Governor
Division of Governmental Coordination

Steve Cowper, Governor
January 1987

Introduction

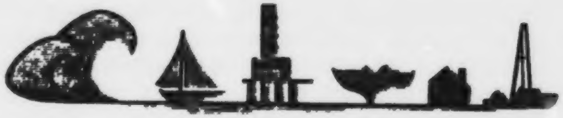
The purpose of this document is to report to the Alaska State Legislature and the public on major actions and activities supported by the *Alaska Coastal Management Program* during 1986.

With the passage of the Alaska Coastal Management Act in 1977, local governments, rural regions, and the State of Alaska began working together to cooperatively manage the use and protection of Alaska's coastal resources. Since 1977, 34 coastal communities and regions have been participating with the state in coastal decisions and preparing plans which specifically address coastal development in their areas. The *Alaska Coastal Management Program* has been an important tool to help the State of Alaska ensure that state interests in coastal development are met, especially in federal actions which affect Alaska's coastal resources and communities.

The *Alaska Coastal Management Program* is designed to:

- bring a broad perspective to decisions on coastal land and water uses
- provide necessary information for use in decision-making
- provide a forum where conflicts can be identified and resolved
- enhance the State of Alaska's role in federal resource decisions and the role of local governments in state and federal decisions, and
- improve the timeliness and coordination of permitting decisions by the state.

Coastal Management: The Legislative Framework



Coastal management planning began with the federal Coastal Zone Management Act of 1972. In the Act, Congress stated its intent to "develop a national program for the management, beneficial use, protection, and development of land and water resources of the nation's coastal zone." The overall goal of the program is a *proper balance of resource development and protection.*

The federal Act encourages states to develop state coastal management programs tailored to their needs and interests. Two incentives are provided. First, the Act authorizes grants to states to develop and implement their programs. Second, the Act requires the federal government, in its discretionary actions, to be consistent with state programs.

The Alaska Coastal Management Act was then passed in 1977 to provide for the orderly and balanced development of Alaska's coast, with full opportunity for the involvement of coastal residents in decisions.

The Alaska Coastal Management Program

The State of Alaska and coastal communities, which are called *coastal districts*, work cooperatively to develop and implement Alaska's coastal management program. Coastal districts include:

- organized boroughs that exercise planning authority
- unified home rule municipalities
- home rule cities, first-class cities, and under certain circumstances, second-class cities
- regional coastal resource service areas directed by elected planning boards.

The Alaska Coastal Policy Council sets policy for the *Alaska Coastal Management Program* and approves coastal district programs. The Coastal Policy Council represents both state and local interests. The Council's membership includes seven state agency representatives and nine locally elected officials appointed by the Governor from nominations submitted by municipalities.

The Governor's Division of Governmental Coordination acts as staff to the Coastal Policy Council, coordinating the development, review, and approval of district programs.

The Coastal Policy Council adopted *standards* for development in the coastal area. The standards are general policies guiding various kinds of coastal development. These standards form the state program in areas where district programs have not been developed and approved by the Coastal Policy Council. Moreover, coastal districts must consider the state coastal management standards in the development of their district programs.

Standards have been adopted for the following topics:

- coastal development
- geophysical hazard areas
- recreation
- energy facilities
- transportation and utilities
- fish and seafood processing
- timber harvest and processing
- mining and mineral processing
- subsistence
- habitats
- air, land, and water quality
- historic, prehistoric, and archaeological resources

District Planning

Districts develop coastal management programs that include a resource inventory, a statement of the district's boundaries, policies for coastal development, and methods for implementing the program. The districts follow a *public participation and review* process specified in state guidelines. This process includes the development of two documents that are widely distributed for public review: the public hearing draft and the conceptually approved draft.

Some coastal areas have unique or significant values or uses associated with them. The Coastal Policy Council has the authority to adopt special management plans for these *areas which merit special attention,* which may be located either inside or outside of coastal districts.

After extensive public review and Coastal Policy Council approval, coastal district programs are submitted for the approval of the federal Department of Commerce, National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management (OCRM). These submittals are processed either as routine program implementation actions or as amendments to the *Alaska Coastal Management Program.* A determination by OCRM that a district program is an amendment initiates an extensive additional review by OCRM.

Once state, local, and federal approvals are granted, the programs are used to guide land and water uses and activities that have a direct and significant impact on coastal waters.

Program Implementation

Until district coastal management programs are developed and approved, state resource agencies use individual agency authorities to implement the *Alaska Coastal Management Program* standards in coastal areas of the state. Once district programs are fully approved, planning and management actions of state agencies must be consistent with the standards and with applicable district programs; the actions of districts must also be consistent with their coastal management programs.

Under the *Alaska Coastal Management Program* and the state *consistency review process* regulations (6 ACC 50), the Division of Governmental Coordination (DGC) schedules and coordinates agency review of all required state permits for projects located in Alaska's coastal area. DGC seeks to achieve agency consensus on project approvals. Once a proposed coastal development project has been found consistent with applicable standards of the *Alaska Coastal Management Program* and specific agency permit requirements, project permits are issued. The majority of projects reviewed for consistency are approved in review timeframes of either 30 or 50 days. DGC maintains regional offices in Anchorage, Fairbanks, and Juneau for convenient access by development project applicants. Having regional offices also facilitates timely project reviews and permit issuance by state resource agency personnel having the greatest familiarity with the natural resources of each region. The result of this process is that the time and effort needed to obtain state approval for a variety of permits is significantly limited, especially for projects requiring several federal and state approvals.

The consistency review process for coastal projects serves to:

- streamline and expedite reviews and decisions on coastal development projects
- establish uniformity in the state's comments and decisions on proposed projects, including direct federal actions or federally permitted development projects
- eliminate repetitive review decisions
- provide opportunity for public and local participation in state decisions
- assist applicants in the processing of state and federal permits
- achieve balanced, factually documented decisions including consideration of the costs and benefits of requiring a particular stipulation
- provide a mechanism for resolving conflicts between agencies, the applicant, and the local community, and
- render a conclusive consistency determination for coastal projects that must be reviewed for consistency with the *Alaska Coastal Management Program.*

1986 Progress Report

A summary of *Alaska Coastal Management Program* and district achievements in 1986 follows. More detailed information on the current status of individual coastal district programs and district activities in 1986 is provided in the next section of this report.

Coastal Policy Council Actions

In 1986, the Coastal Policy Council approved three coastal district programs, three amendments to programs, and two plans for areas which merit special attention. The Coastal Policy Council approved the *City and Borough of Juneau* coastal management program, the *Northwest Arctic coastal resource service area* coastal management program, the *City of Valdez* coastal management program, and an amendment to the *City of Cordova* coastal management program. To address federal concerns with the *Aleutians East* and *Bristol Bay coastal resource service area* programs, which were approved by the state in 1985, the Coastal Policy Council approved amendments to these two programs. The Coastal Policy Council also approved plans for two areas which merit special attention: the *Juneau downtown waterfront* and the *Eyak Lake* area adjacent to the Cordova coastal district.

8. Oregon Coastal Management Program Summary

Program Summary

The Oregon Coastal Management Program (OCMP) is part of Oregon's statewide program for coordinated land use planning. The program is a partnership between local governments and state and federal agencies to resolve general and often competing interests through land use plans and implementing measures for all lands in Oregon's coastal zone. The program is based primarily on the Oregon Land Use Planning Act (ORS 197) and its requirements including the statewide planning goals and requirements for state-approved comprehensive plans. The program also includes specific resource management authorities in other state laws.

The statewide planning goals are regulations adopted by the Land Conservation and Development Commission (LCDC) which set minimum standards for comprehensive planning and other government decisions affecting land use. The goals also express the state, regional, and national interests in land use. Four of the goals set specific standards for planning of coastal resources including estuaries, shorelands, beaches and dunes, and the ocean.

Comprehensive plans developed and administered by coastal cities and counties are the primary vehicle for implementing the goals. Plans must be fully coordinated with the needs and policies of state and federal agencies, special districts, and the public. Once approved by LCDC, a plan serves as the state's standards for all land use decisions within the geographic area it covers.

Several state laws for management of coastal resources are also included in the Oregon Coastal Management Program. These include the Removal-Fill Law, which regulates alterations to estuaries, lakes and other waterways, and the Oregon Beach Bill which regulates uses and alterations along the ocean shore.

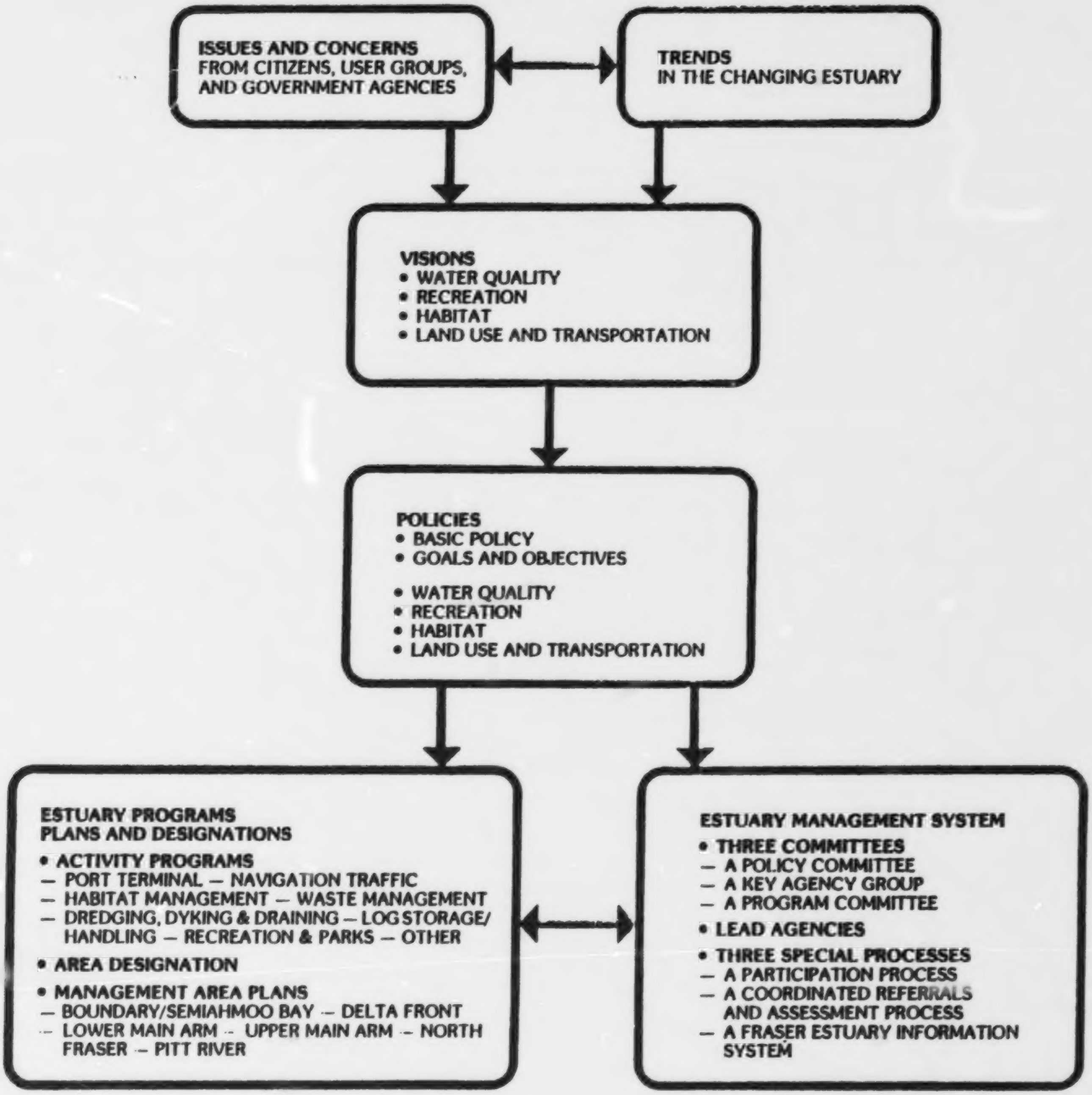
Together, the goals, comprehensive plans, and state statutes express particular concern about the importance of protecting estuarine, agriculture and timber resources; about the needs for water-dependent development, port development, energy production and commercial fishing; about flooding and erosion hazards associated with development in shoreland and beach and dune areas; and about recreational access, urbanization and the maintenance of open space. Through the goals, coordinated comprehensive plans and provisions of other state statutes, Oregon has a program which addresses these issues.

The objective of the OCMP is to develop, implement, and continuously improve a management program which will, as appropriate, preserve, conserve, develop and restore the natural resources of the coastal zone. The program attempts to create and maintain a balance between conservation and development, and between conflicting private and public interests. This balance is intended to assure the greatest benefits to this and succeeding generations of Oregonians.

Oregon's participation in the federal coastal zone management program has resulted in increased technical, financial and legal assistance to local governments, regional agencies and state agencies in managing coastal resources. The state has received funds to foster the development and implementation of coordinated comprehensive plans, to acquire the South Slough Estuarine Sanctuary, to create a technical data base for use in making more informed decisions, and to identify and plan for the impacts of coastal energy development. The state expects that future funds will be available for these purposes as well as for ongoing research, public education and for beach access. Finally, because Oregonians have taken the lead in wisely and responsibly managing their coastal resources, participation in the federal program assures that, under federal law, actions of federal agencies which affect the coastal zone will be consistent to the maximum possible extent with Oregon's program.

9. Fraser River Estuary Management Program - flowchart (from "A Living River By the Door")

FRASER RIVER ESTUARY MANAGEMENT PROGRAM



ISSUES AND CONCERNS
FROM CITIZENS, USER GROUPS,
AND GOVERNMENT AGENCIES

TRENDS
IN THE CHANGING ESTUARY

VISIONS
- WATER QUALITY
- RECREATION
- HABITAT
- LAND USE AND TRANSPORTATION

POLICIES
- BASIC POLICY
- GOALS AND OBJECTIVES

- WATER QUALITY
- RECREATION
- HABITAT
- LAND USE AND TRANSPORTATION

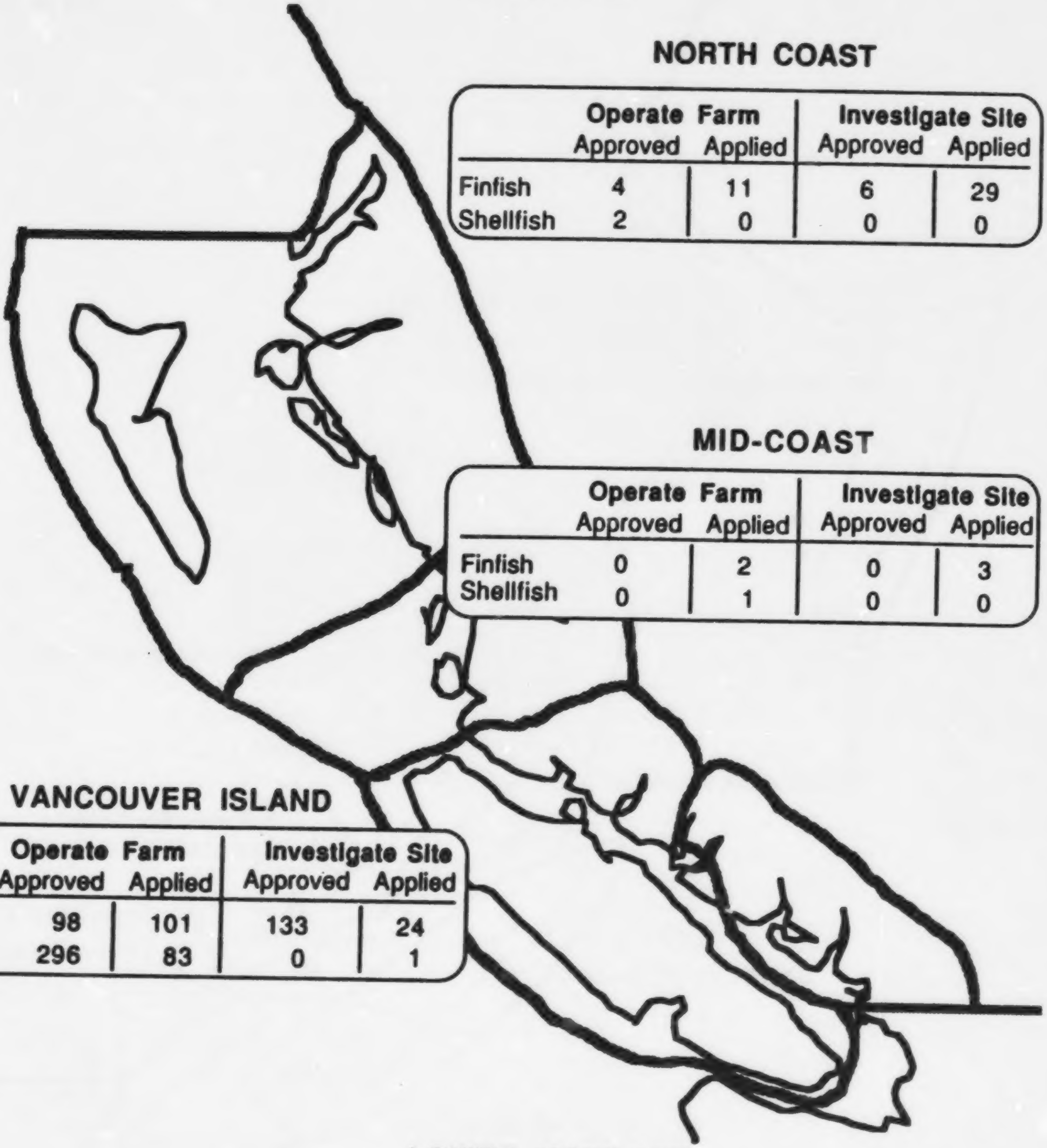
ESTUARY PROGRAMS
PLANS AND DESIGNATIONS
- **ACTIVITY PROGRAMS**
  - PORT TERMINAL — NAVIGATION TRAFFIC
  - HABITAT MANAGEMENT — WASTE MANAGEMENT
  - DREDGING, DYKING & DRAINING — LOG STORAGE/HANDLING — RECREATION & PARKS — OTHER
- **AREA DESIGNATION**
- **MANAGEMENT AREA PLANS**
  - BOUNDARY/SEMIAHMOO BAY — DELTA FRONT
  - LOWER MAIN ARM — UPPER MAIN ARM — NORTH FRASER — PITT RIVER

ESTUARY MANAGEMENT SYSTEM
- **THREE COMMITTEES**
  - A POLICY COMMITTEE
  - A KEY AGENCY GROUP
  - A PROGRAM COMMITTEE
- **LEAD AGENCIES**
- **THREE SPECIAL PROCESSES**
  - A PARTICIPATION PROCESS
  - A COORDINATED REFERRALS AND ASSESSMENT PROCESS
  - A FRASER ESTUARY INFORMATION SYSTEM

10. Aquaculture Industry Overview: Statistics

AQUACULTURE IN BRITISH COLUMBIA

FIGURE 1- FARM SITES (OPERATION AND INVESTIGATION)
MAY, 1988



NORTH COAST

	Operate Farm Approved	Operate Farm Applied	Investigate Site Approved	Investigate Site Applied
Finfish	4	11	6	29
Shellfish	2	0	0	0

MID-COAST

	Operate Farm Approved	Operate Farm Applied	Investigate Site Approved	Investigate Site Applied
Finfish	0	2	0	3
Shellfish	0	1	0	0

VANCOUVER ISLAND

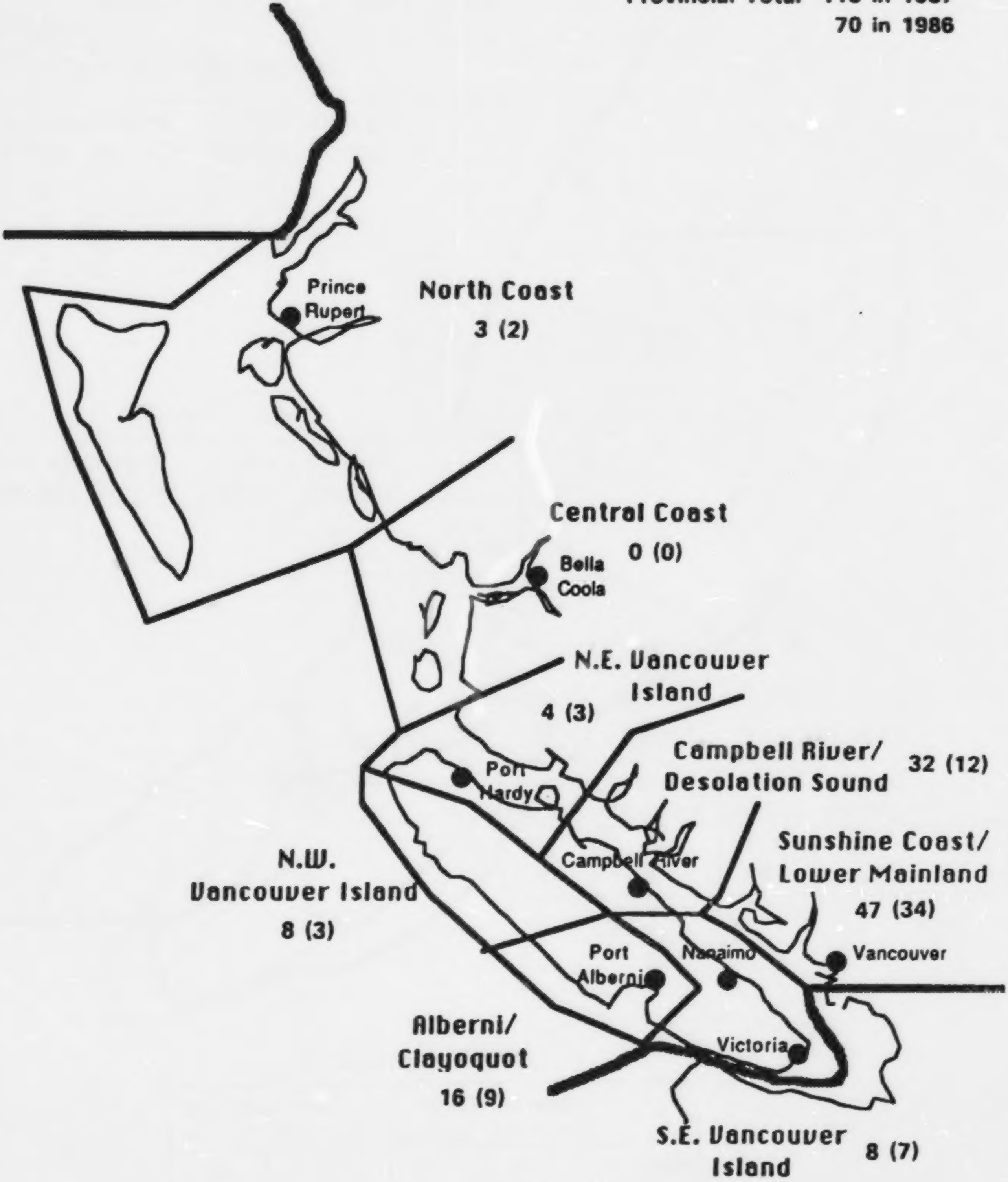
	Operate Farm Approved	Operate Farm Applied	Investigate Site Approved	Investigate Site Applied
Finfish	98	101	133	24
Shellfish	296	83	0	1

LOWER MAINLAND

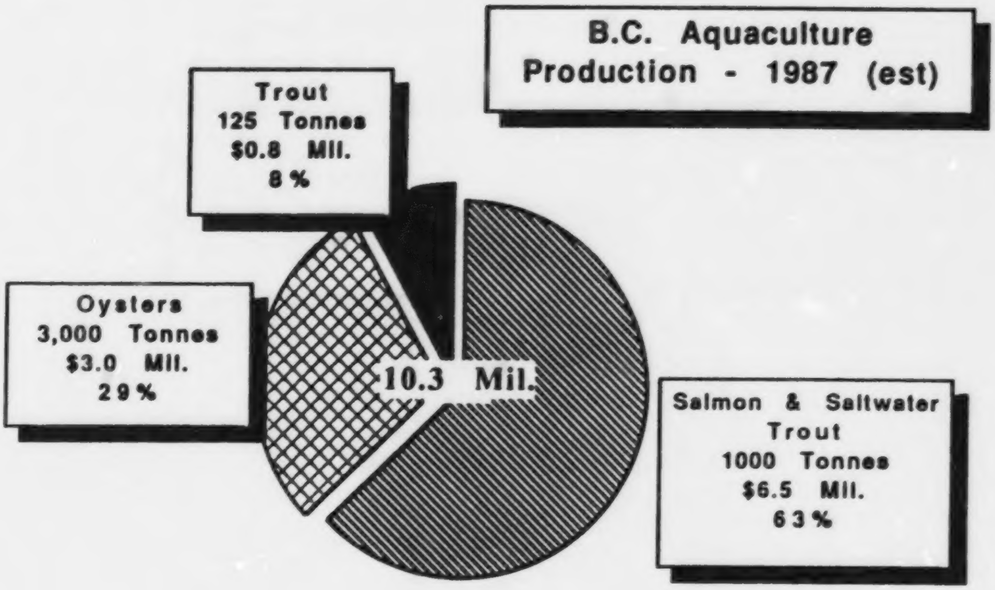
	Operate Farm Approved	Operate Farm Applied	Investigate Site Approved	Investigate Site Applied
Finfish	76	33	18	18
Shellfish	106	32	3	2

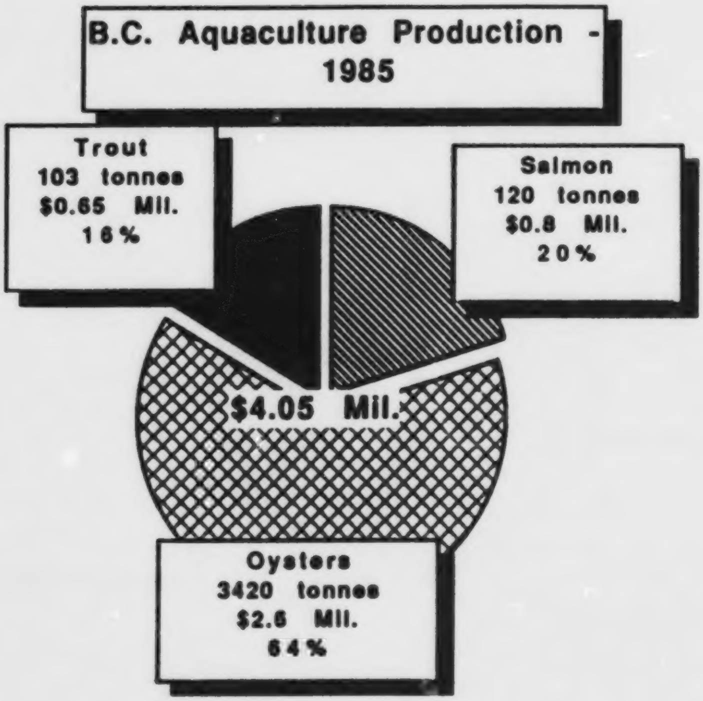
DISTRIBUTION OF OPERATING FARMS IN BRITISH COLUMBIA

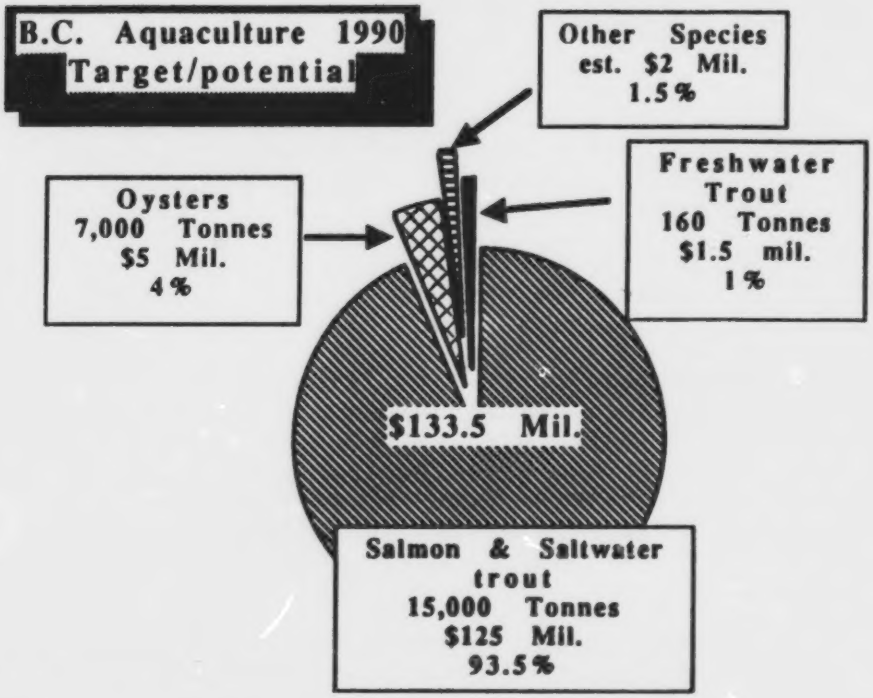
Provincial Total 118 in 1987
70 in 1986


Prince Rupert
North Coast
3 (2)
Central Coast
0 (0)
Bella Coola
N.E. Vancouver Island
4 (3)
Port Hardy
Campbell River/ Desolation Sound
32 (12)
Sunshine Coast/ Lower Mainland
47 (34)
Campbell River
N.W. Vancouver Island
8 (3)
Port Alberni
Nanaimo
Vancouver
Alberni/ Clayoquot
16 (9)
Victoria
S.E. Vancouver Island
8 (7)

Up to November 30, 1987. Numbers in parentheses were the farms operating up to October 30, 1986.


B.C. Aquaculture Production - 1987 (est)
Trout 125 Tonnes $0.8 Mil. 8 %
Oysters 3,000 Tonnes $3.0 Mil. 29 %
10.3 Mil.
Salmon & Saltwater Trout 1000 Tonnes $6.5 Mil. 63 %


B.C. Aquaculture Production - 1985
Trout
103 tonnes
$0.65 Mil.
16%
Salmon
120 tonnes
$0.8 Mil.
20%
$4.05 Mil.
Oysters
3420 tonnes
$2.6 Mil.
64%



B.C. Aquaculture 1990 Target/potential

11. Excerpt from Summary of Recommendations of Coastal Zone Resource Sub-Committee (May 1977)

Summary of Coastal Zone Resource Sub-Committee Recommendations:

1. Early consideration should be given to the establishment of an ongoing inter-governmental mechanism, comprised of the appropriate governmental agencies, whose fulltime commitment would be to:

   A) Provide coordinative and advisory function to coastal related programs and plans or requests of government and non-governmental organizations, including the dissemination of information to the general public;

   B) Identify regional resource management strategies and options and develop operating guidelines for integrated coastal resource management and protection;

   C) Assess current initiatives, such as the joint federal/provincial study program on the Fraser River and Estuary, with regard to their applicability to other regions of the coast;

   D) Direct the development and implementation of an integrated coastal resource management program by coordinating the following tasks:

      i) The preparation of a coastal resource folio or atlas which provides an overall perspective of the coastal zone, including its physiographic, biotic, oceanographic and climatic regions, and boundaries, as well as associated coastal processes and natural resource values and uses. The scale of this folio should be at the "broad resource allocation level".

      ii) The development and implementation of a "biophysical" inventory program for the coastal zone. Particularly for use with the shoreline and marine components of the coastal zone, this program will require:

         a) The development, testing, and application of inventory methodologies and classification systems;

b) The coordination of current and presently scheduled research and inventory efforts which may be pertinent to the program;

c) The establishment of research programs oriented towards in-depth examination of selected factors within biophysical resource systems;

d) The development of stronger liaisons between information generating and informated using agencies to ensure that the information is of a format and scale facilitating its immediate and maximum use;

e) The identification of appropriate criteria (classification systems) for such interpretations as use capability, use suitability, impact sensitivity, and potential harvestability.

iii) The analysis of specific problems recurring in the coastal zone and the identification of priority geographic and subject areas requiring detailed inventory, research and management efforts.

iv) The review of existing referral systems with a view towards identifying specific changes that can and should be made. Aspects that require further investigation include:

a) The simplification of some referral systems and the expansion of others to include the interests of additional agencies;

b) The improvement of some referral systems with respect to quality and quantity of information circulated so that recipients can make informed judgments;

c) The addition of increased resources and analytical capabilities of some of the participants in referral systems, in order that these agencies can give adequate consideration to referrals.

v) The identification, in cooperation with the above activities, of the role and orientation that research should take in the coastal zone. Areas requiring further collaborative investigation include:

   a) The design of a system to identify the biological and physical variables that should be routinely monitored in specified coastal resource systems;

   b) The identification of specific proposed or ongoing developments suitable for monitoring experiments applicable to future impact prediction;

   c) The assessment of the application of advanced technology to coastal zone management (e.g. the Landsat satellite for reconnaissance inventories and for monitoring of B.C. coastal environment);

   d) The assessment of existing governmental and university data banks (in cooperation with agencies and experts in this field) with the view to assessing integrated data sets and options for developing an integrated, computerized data management system (storage, retrieval and analysis) for the coastal zone;

   e) The assessment of existing and future fundamental research needs with respect to biological and physical processes, system interrelations, etc..

vi) The development of programs for public information, and the education of governmental ersonnel in the field of coastal zone management. Number of options could be pursued;

   a) Educational programs (lectures, courses, multimedia presentations and field demonstrations, etc.) emphasizing: - the significance of the coastal rezone, its resources and its problems; - the necessity of establishing a biophysical basis for coastal resource management decisions. (For example, current efforts to communicate these concepts to coastal regional districts, key coastal municipalities, key provincial agencies, coastal oriented private industry and public interest groups should be expaned).

b) Encouraging interdisciplinary programs for resource management. Scholarships for graduate students interested in coastal resources should be offered and provision should be made for study leaves for government employees to take courses and degree programs in this field.

c) Procedures for expediting the communication of research results and management experience elsewhere should be enhanced. These should be implemented in addition to training programs, and would involve provisions for reporting on contract research, for mounting and attending conferences, and for visiting other agencies of government.

vii) Consistent with the various management decisions to be made, existing socio-economic data should be collected, analyzed, and specific data needs should be identified. Future study programs should include the development of methodologies for generating socio-economic information and for integrating it with biophysical data.

2. The initial focus for the above initiatives should be in the Strait of Georgia region, and more specifically should concentrate on the southeast coast of Vancouver Island, the Lower Mainland and Howe Sound.

3. Existing biophysical data and socio-economic data (as it is generated) should be made available to local jurisdictions in a readily usable form, (e.g. guidelines for the use of biophysical data in decisions regarding land and resource use management should be developed). In addition, such methods as the provision of technical expertise to assist coastal municipalities and regional districts with the zoning and development control processes should be considered. Similarly, general policy and management guidelines for the coastal zone should also be developed and distributed to development oriented agencies (government and private) to guide them

in planning the location and scale of proposed facilities. For example, consideration should be given to the desirability of developing an impact assessment policy for the coastal zone along the lines of the recent provincial order-in-council made in respect of Sturgeon and Roberts Banks and Boundary and Semiahmoo Bay.

4. Coastal resource management plans which designate the uses of land and water resources should be developed. Since the formulation and implementation of such plans would be greatly facilitated by the provision of background information - biophysical, social, economic - in a form which allows resource use options including their benefits and costs to be easily identified and assessed, there is an obvious need to establish a close-working relationship between this management function and the function of information generation and dissemination as identified in Recommendation No. 1 above.

5. Ongoing financial and administrative mechanisms at both the federal and provincial levels should be considered to facilitate the acquisition of lands and features which merit conservation but are not protectable through existing mechanisms.

6. The public should have the opportunity to participate in coastal resource use decisions. Approaches suggested for ensuring the representation of an informed public and decision-making include:

   A) The establishment of a central and/or regional information centre(s) on coastal resource management;

   B) The provision that those agencies of government which reflect the range of public interests have an opportunity to participate in the decision-making process;

   C) The provision of an opportunity for affected interests to participate directly in the decision-making process;

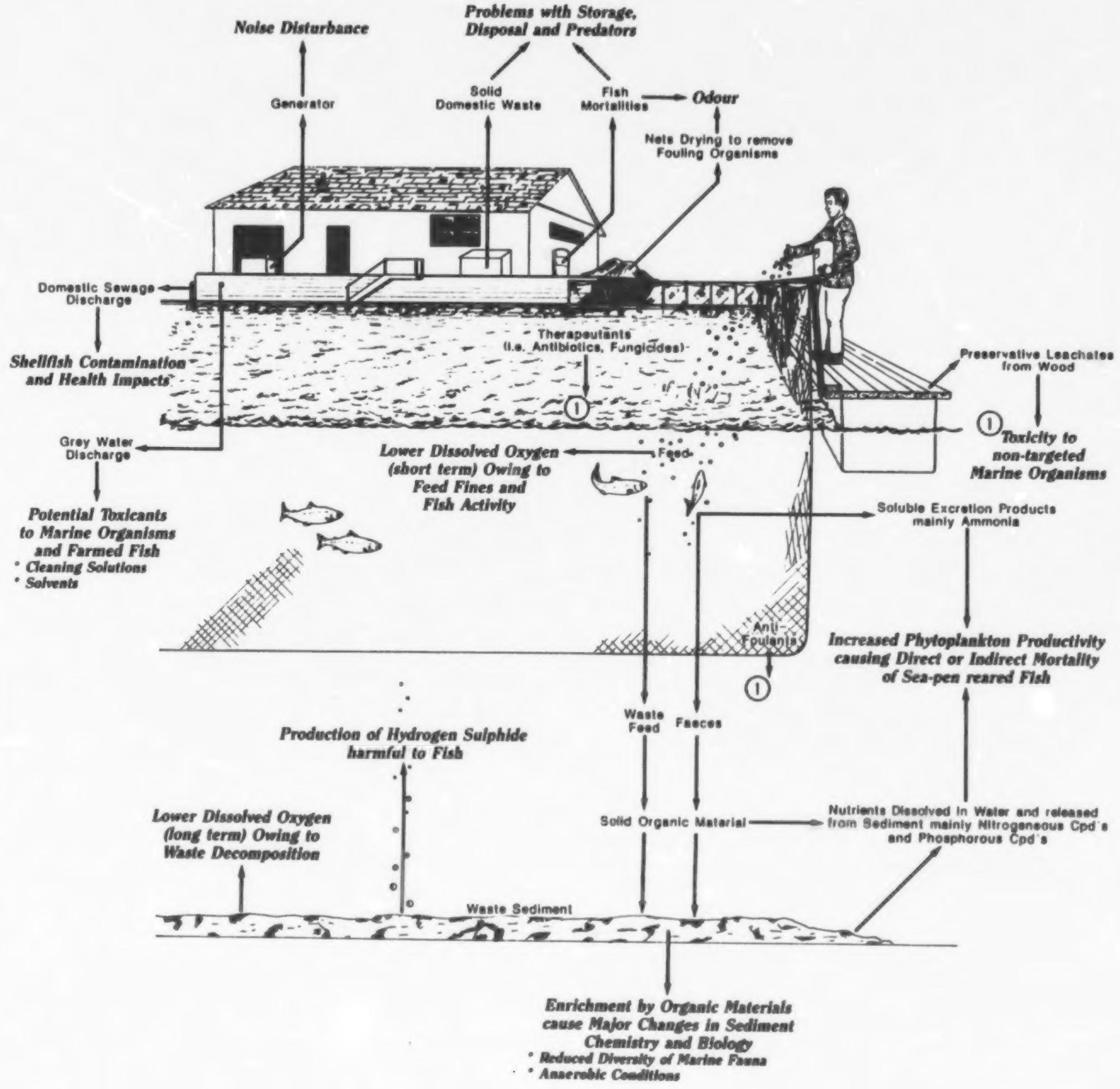
   D) The provision of funding to public interest groups in order that they may develop position papers and education programs.

7. There are a number of initiatives that can and should be pursued on an individual agency basis. Those identified to date include: the incorporation of ecological criteria into the resolution of problems associated with accreted

lands, particularly with respect to acquired private property rights and land use; and the controlling of unathorized long-term use of Crown lands (trespass).

12. Possible impacts of a salmon farm upon the marine environment (courtesy Ministry of Environment and Parks)

POSSIBLE IMPACTS OF A SALMON FARM UPON THE MARINE ENVIRONMENT



Noise Disturbance

Generator

Problems with Storage, Disposal and Predators

Solid Domestic Waste

Fish Mortalities

Odour

Nets Drying to remove Fouling Organisms

Domestic Sewage Discharge

Shellfish Contamination and Health Impacts

Therapeutants (i.e. Antibiotics, Fungicides)

Preservative Leachates from Wood

①

Toxicity to non-targeted Marine Organisms

Grey Water Discharge

Potential Toxicants to Marine Organisms and Farmed Fish
- *Cleaning Solutions*
- *Solvents*

Lower Dissolved Oxygen (short term) Owing to Feed Fines and Fish Activity

Feed

Soluble Excretion Products mainly Ammonia

Anti-Foulants

①

Increased Phytoplankton Productivity causing Direct or Indirect Mortality of Sea-pen reared Fish

Production of Hydrogen Sulphide harmful to Fish

Waste Feed

Faeces

Lower Dissolved Oxygen (long term) Owing to Waste Decomposition

Solid Organic Material

Nutrients Dissolved in Water and released from Sediment mainly Nitrogeneous Cpd's and Phosphorous Cpd's

Waste Sediment

Enrichment by Organic Materials cause Major Changes in Sediment Chemistry and Biology
- *Reduced Diversity of Marine Fauna*
- *Anaerobic Conditions*

BC

Ministry of Environment and Parks
August 1987.

13. Commentary on Washington State Timber, Fish, Wildlife Agreement.

Appendix 13

Commentary on Washington State Timber, Fish, Wildlife Agreement

The origin of the TFW agreement can be traced to a recent U.S. federal court decision upholding certain Indian treaty rights which caused the forest industry to be concerned to the point that it looked for creative options in order to alleviate the risk of a potential loss in higher courts. The result, through application of principles of consensual dispute resolution, was an agreement hammered out through hundreds of hours of meetings among representatives who were committed to achieving their own positive objectives, rather than attaining absolute victory over those interests they perceived to be adverse to their own. The process recognized the inherent limitations of legislation in the control of human conduct. While this office is of the opinion, and recommends, that public management systems have their bases in legislation, wise management of the physical environment must recognize the human component as critical to achieving the legislative objectives. The TFW process did just that.

The process began with informal discussions that included all known interest groups and agencies. Out of those discussions, "which eventually involved all the appropriate State agency people, industry, environmental folks and tribal representatives," came an agreement for an exploratory meeting.

The purpose of the exploratory meeting lasting two and half days was to define positive goals for each group: "We agreed that anybody who stayed in the process after the two and a half days, had to be committed to achieving all of the goals. If you couldn't subscribe to that, you took yourself out of the process. And if you stayed, agreeing to abide by the goals, decisions would be made by consensus, not by vote."

Thus was achieved a fundamental shift in the orientation of public resource regulation - rather than a series of commands from courts or government agencies, the participative process by which regulatory goals were defined gave each group a personal stake in the success of the program. Jim Waldo, a Seattle attorney who was one of the key architects of the TFW agreement, has described it as follows:

> "It took six arduous months to complete the building of the TFW process. The entire premise of forest management in the state of Washington was changed from a regulation based system (in other words if it's in the regulation you're going to have to do it, but if it's not in the regulations you don't have to do it). From this we went to a system that is based on managing towards certain goals and far more sensitive to site-specific situations, location by location. Regulations are still there, but only as a stop-gap where the parties find it impossible to find any other way to conduct their business."
>
> "We also set up a priority matrix where we have concerns about how an operation is conducted. And instead of trying to deal with it by regulation, we identified where those conditions are likely to occur and through a series of fundings at the state level and agreements between industry, environmental groups, the tribes, and state agencies, we have interdisciplinary teams that go out and have a look at those proposed timber cuts. And they don't start with a set of regulations. They start with a set of concerns, or issues about those cuts, and they tailor how that cut is going to occur. We've been at this process informally for about five months now, with eight or nine of these interdisciplinary teams in the field."

The ultimate goal of the TFW process was to create a management environment in which cooperative relationships based on mutual respect and understanding supercede the former system based on fractious, adversarial postures and continual attempts to crush opponents' interests through legislation and litigation. As Jim Waldo expressed it: "Ultimately, it means developing a system where relationships improve over time so that pretty soon the way you solve problems is to pick up the telephone."

It should be remembered that legislation did have its part in the TFW process. The ultimate agreement forged out among all of the groups involved, and specifying a process involving scientific, managerial, and policy input, with a research and monitoring component, and the previously mentioned "inter-disciplinary teams", passed into legislation through the State Legislature and Senate with no opposing votes.

It should again be stated that American experience with negotiated dispute resolution, as with coastal management, has not been utopian. Differences in governance systems between the U.S. and Canada must be considered in any attempt to "institutionalize" consensual dispute resolution nechanisms. As with coastal management, this report attempts to isolate the principles of fairness within specific contexts. Dorcey and Riek in a paper entitled "Negotiation-based Approaches to the Settlement of Environmental Disputes in Canada" have observed a number of differences between Canadian and American governance systems which are worth reviewing:

- Property rights and due process [apart from criminal matters] are not enshrined in the constitution in Canada.
- The constitutional division of responsibilities for natural resources gives the provinces a much bigger role than states in the Canadian federal system.
- Federal and provincial government executives (i.e. Cabinets) in Canada have much greater freedom to act; they are not so constrained by the courts and legislatures as in the U.S.
- The discretionary nature of Canadian legislation and the weak development of administrative compliance legislation have resulted in much less use of the courts in Canada.
- The courts in the U.S. have historically taken a more interventionist role and this is only slowly evolving in Canada under the influence of the new Charter of Rights and Freedoms.
- There is a greater tradition of self-governance and litigation that grew out of the revolution in the U.S., in contrast to the tradition in Canada that the government has always been there and the Crown can do no wrong nor be sued.

Dorcey and Riek take note of two phenomena peculiar to the different legislative environments in Canada and the U.S.: firstly, in Canada there is much less use of bargaining and negotiation "that is stimulated by a desire to avoid the courts". (This can be seen to have been the major impetus toward success in the Timber, Fish, Wildlife Agreement; unfortunately it was a stumbling block to a similar agreement to enable aquaculture development to proceed in Washington State - the court system was perfectly acceptable for some parties who believed they would prevail in a legal contest.) At the same time, Dorcey and Riek note that smaller Canadian bureaucracies, operating under "highly discretionary legislation" with relatively weak powers of administrative compliance, have likely increased the feasibility of useful, productive bargaining and negotiation.

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